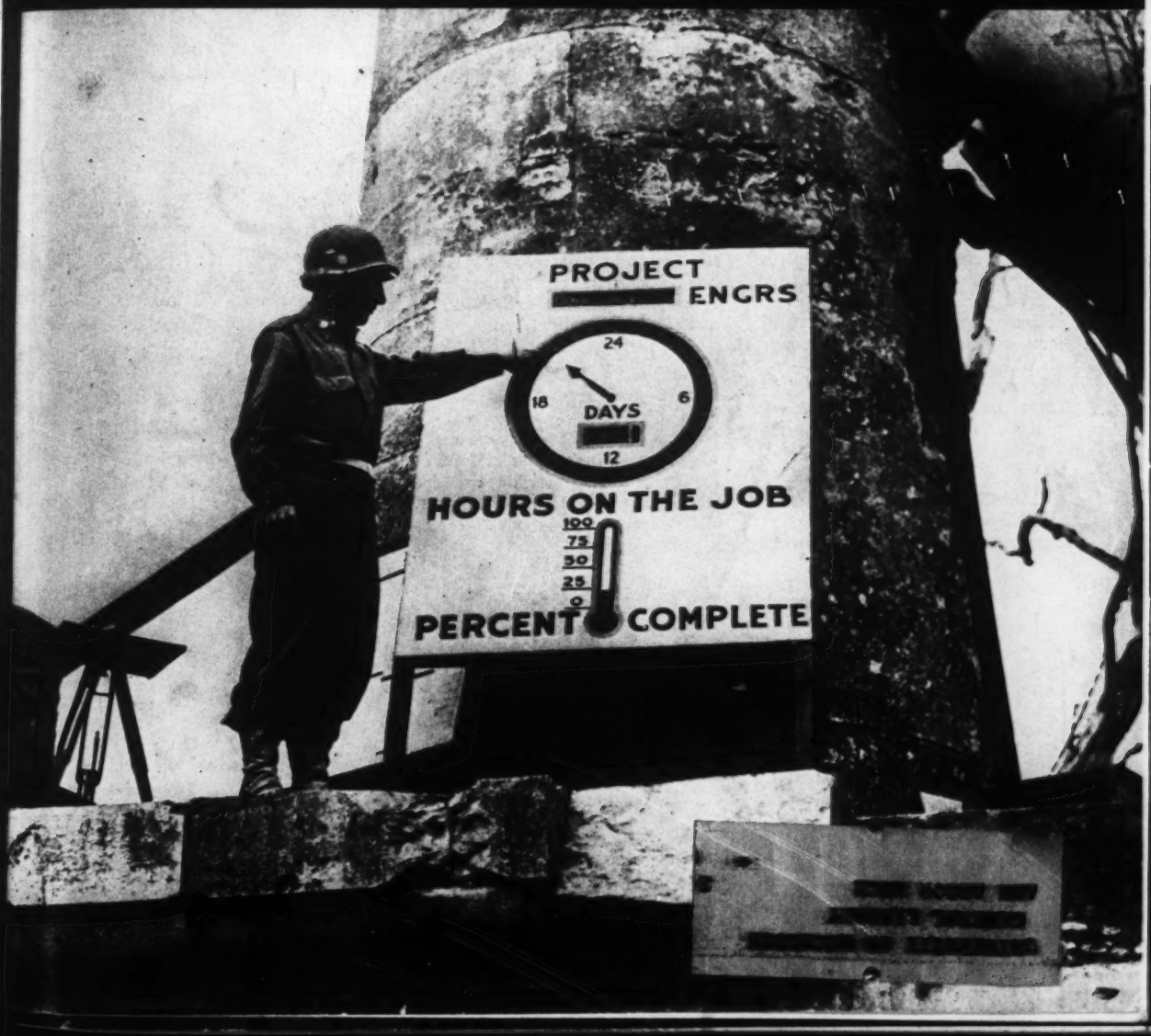
ENGINEERING NEWS-RECORD

Combat engineers in Italy keep progress chart on their battlefront bridge projects.



[PUMP TIPS FROM ALLIS-CHALMERS—ONE IN A SERIES]

How to make WEARING RINGS Last Longer . . .

ANY NEW PUMP you buy is guaranteed to deliver its rating in capacity and head. But whether it *retains* its actual capacity depends to a great extent on the condition of its wearing rings. For when rings are worn thin, liquid leaks through the enlarged clearance between impeller and casing — seriously reducing capacity.

One of the major causes of excessive ring wear is misalignment. So serious can it be, that Allis-Chalmers engineers were led to develop, for many applications, the "Electrifugal" pump — in which *both* impeller and motor are mounted on *one* shaft and in *one* frame. This *unit-design* prevents parts in the pump's closely fitted body from getting out of "kilter" . . . helps you get longer life out of wearing rings.

However, regardless of whether you have a unit-design or separately coupled pump and motor, here are a few tips which will help you get longer wear from rings in your pumps . . .

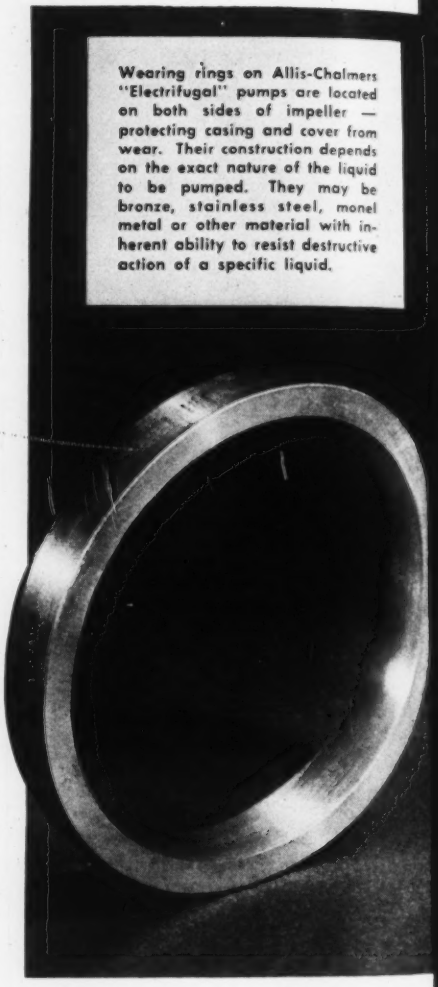
▸ Never allow a pump to run dry — either through lack of proper priming when starting, or through loss of suction when operating. Remember . . . water is a *lubricant* between rings and casing.

▸ Examine wearing rings at regular intervals. When new, rings in the smaller size, more commonly used pumps should have a diametrical clearance of about 0.006 to 0.008 inch on cold liquid service, and about 0.010 to 0.012 on hot liquid service. When ring clearance becomes 0.020 to 0.030 inch on the diameter it is more economical to replace rings than to pay for power lost in leakage through them.

▸ Gritty liquid or foreign matter in liquid accelerates ring wear. If condition exists, provide intake end of suction piping with a suitable screen to filter out abrasive materials.

▸ Watch pump alignment. Excessive strains from suction or discharge piping can and do distort casing. Wearing rings protect pump from serious damage in this event by themselves taking the wear. However, *before* installing new rings, be sure to check into the *source* of distortion.

▸ Send for your *free* copy of "Handbook for Wartime Care of Centrifugal Pumps". This valuable booklet applies to *all* makes of pumps; contains *no* advertising. Contents include: tables of friction losses; guide to locating trouble; wartime maintenance schedule. ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WISCONSIN. A 1756

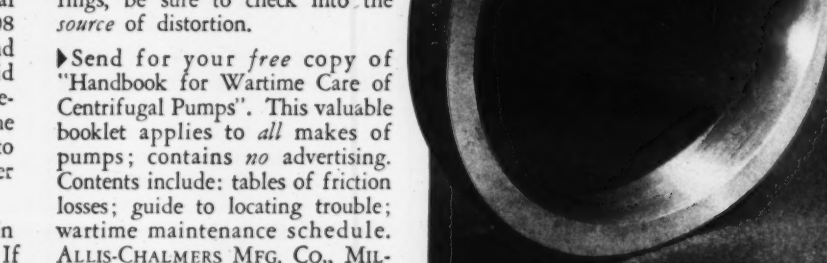


Wearing rings on Allis-Chalmers "Electrifugal" pumps are located on both sides of impeller — protecting casing and cover from wear. Their construction depends on the exact nature of the liquid to be pumped. They may be bronze, stainless steel, monel metal or other material with inherent ability to resist destructive action of a specific liquid.

♪ *Tune in the Boston Symphony, Blue Network, every Saturday at 8:30 pm, EWT.*

ALLIS-CHALMERS PUMPS

Allis-Chalmers builds all types and variations of pumps shown at right. Capacities from 10 to 150,000 gpm—heads to 2500 lbs.



The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • JULY 6, 1944 • VOLUME 133 • NUMBER 1

Developments in materials recorded by A.S.T.M.

Revision in cement specification permits addition of new air-entraining agent. Registration totals over 2,000, a new record.

When the American Society for Testing Materials met in New York City last week for its 47th annual meeting, the usual large number of changes in specifications for construction materials was lacking, except in the field of cement. Here principal interest centered on the use of air-entraining agents in cements for concrete pavements, a subject that has had much attention both in the field and in the laboratory for the past few years.

The meeting was also characterized by record registration of over 2,000, which compares to a previous high figure of 1,534 at the 1937 convention, also held in New York. One reason for the large attendance was the fact that the society's membership has now increased to the record total of 5,257, as of June 1, according to Secretary-Treasurer C. L. Warwick, who was presented with a gift of government bonds in recognition of his 25 years of service in that position. Another reason for the record registration was the extensive committee work required to keep war emergency specifications up to date.

A highlight of the convention was a report of the executive committee to the effect that greater aid to the war effort would continue to be the primary consideration of the society, but that its place in the future is now receiving the careful consideration of a special study committee with extensive powers to strengthen existing society activities and to inaugurate new ones. The executive committee also reported that because of the great demand for the society's 1942 book of standards, the next revised edition will be published in 1944, instead of 1945, as originally scheduled.

P. H. Bates, chief of the clay and silicate products division of the National Bureau of Standards, was elected president of the society for the coming year, and Arthur W. Carpenter, of the B. F. Goodrich Co., Akron, was elected vice president.

Harold De Witt Smith of A. M. Tenney Associates, Inc., gave the Edgar Marburg lecture, speaking on "Textile Fibers—An Engineering Approach to an Understanding of Their Properties and Utilization."

The Sanford E. Thompson award, which is given annually to the author of a paper of outstanding merit on concrete aggregates, was presented to Douglas McHenry, engineer with the Bureau of Reclamation, for his paper "A New Aspect of Creep in Concrete and Its Application to Design."

Engineers made honorary members included: Rudolph Philip Miller, consulting engineer of New York, and Hermann von Schrenk, a past president of the society and a consulting engineer of St. Louis, Mo.

Few committees made more specifications changes than Committee C-1 on cement. The most important change dealt with increased use of air-entraining admixtures for concrete pavements. The great interest in the use of such materials was illustrated by the extensive discussion that followed the paper by Charles E. Wuerpel and Albert Weiner of the U. S. Engineers on the use of Vinsol resin and a report by Henry L. Kennedy of Dewey & Almy Chemical Co., on the results of using a compound sold by his firm under the name of Darex Air Entraining Agent. The tentative specifications for treated portland cement for concrete pavements (C 175 — 42 T), now permitting the use of Vinsol resin, was revised to permit the use of Darex, an admixture described as a triethanolamine salt of a sulfonated hydrocarbon. Abstracts of both of the papers referred to will be published in an early issue.

Committee C-1 also revised standard specification for portland cement C 150 — 42) which has been changed to make the compressive strength requirements for cement types I and III the same as those in the federal specifications for portland cement (SS-C-191b) and for high-early-strength portland cement (SS-C-201a). Seven methods of test replacing the old standard methods of sampling and physical testing of portland cement (C 77 — 40) were also adopted. These are named: Sampling hydraulic cement; test for fineness

(*Continued on next page*)

A.S.C.E. cancels annual convention

The annual convention of the American Society of Civil Engineers, scheduled to be held in Cleveland, Ohio, July 19-21, has been cancelled to help relieve the load on the nation's transportation system.

This action was taken by the executive committee of the society on June 30 at the urgent request of J. Monroe Johnson, director, Office of Defense Transportation. Mr. Johnson is a member of the society.

In his letter to Malcolm Pirnie, president of the society, Mr. Johnson said: "The Office of Defense Transportation, during the past two years, has repeatedly urged all organizations, whose meetings were not definitely and urgently war-connected to cancel their conventions. Now we are asking, and asking with all the seriousness at our command, that your organization, if it has a meeting, trade show, convention, or gathering of any sort whatsoever, planned during the remaining months of 1944, cancel that meeting in the interest of wartime transportation. We ask this action on your part, even at the sacrifice of your organization's need for wartime conference and postwar planning."

The local sections' conference which was scheduled to be held at the same time also was cancelled, but the meeting of the board of direction will be held at Cleveland, July 17-18.

of hydraulic cement by the No. 200 sieve; test for normal consistency of hydraulic cement; test for soundness of hydraulic cement over boiling water (Pat test); test for time of setting of hydraulic cement by the vicat or Gillmore needles; test for tensile strength of hydraulic-cement mortars; and test for specific gravity of hydraulic cement.

Tentative standards adopted as standard by Committee C-1 included methods of chemical analysis of portland cement (C 114 — 42 T), and the method of test of compressive strength of hydraulic-cement mortars (C 109 — 43 T). The committee voted to keep in effect the emergency specifications for portland cement (EA — C 150).

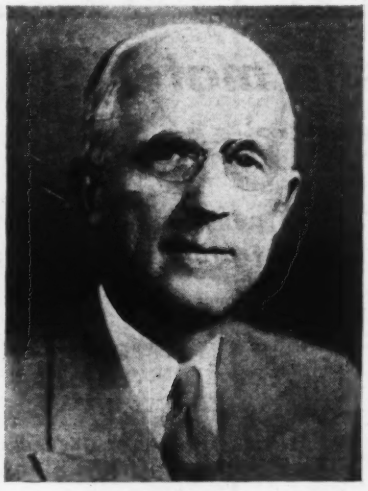
Concrete specifications

Committee C-9 on concrete and concrete aggregates approved for publication as tentative a new method for making and curing concrete compression and flexure specimens in the laboratory. Four standard specifications were revised by this committee namely: those for concrete aggregate (C 33-42); method of test for structural strength of fine aggregates using constant water-cement ratio mortar (C 87-42); test for coal and lignite in sand (C 123-39); and the test for compressive strength of concrete using portions of beams broken in flexure (C116-42).

In addition to these actions, six standard specifications were revised and reverted to tentative. These were the tests for: making and storing compression test specimens of concrete in the field (C 31-42); compressive strength of concrete (C 39-42); securing and testing specimens of hardened concrete from the structure (C 42-42); flexural strength of concrete (C 78-39); yield of concrete (C 138-39); and surface moisture in fine aggregate (C 70-30). A tentative test method withdrawn by Committee C-9 was that for soundness of aggregates by freezing and thawing (C 137-38 T), the committee having decided that this method departed from the procedure of most laboratories.

Concrete testing

A number of papers on concrete research attest to the continued efforts to devise testing procedures that will make our knowledge of this material more exact and complete. For example, C. Martin Duke and Harmer E. Davis (University of California), reported some pioneer work in investigating creep of concrete under triaxial loading. Using cylinder specimens, they applied axial loads by calibrated springs and lateral loads hydrostatically. From the tests it was indicated that the Poissons



P. H. Bates, new president of the American Society for Testing Materials

ratio effect, under sustained load is about $\frac{1}{6}$; that differences in cement composition do not influence creep; and that under triaxial loading there is a marked decrease in longitudinal strain. Out of the investigation the authors also developed a method of estimating creep under combined stresses from results of measurements of creep under simple axial compression.

Another instance of a search for knowledge in new types of tests was recorded in a paper by Bailey Tremper, materials engineer, Washington Department of Highways, in which were presented the results of a laboratory investigation of the usefulness of pull-out bar tests as a measure of concrete strength; 120 pull-out specimens were tested, and the results compared with the compressive strengths of 120 standard cylinders, all specimens being cast from the same 30 batches of concrete. The pull-out specimens were 10 by $4\frac{1}{2}$ in. in plan by 10 in. high, and the pull-out bar was $\frac{1}{2}$-in. in diameter with an enlarged cylindrical end $\frac{3}{4}$ in. in diameter and $\frac{1}{8}$ in. long. Both uncrushed and crushed gravels were used as coarse aggregate.

The work revealed that pull-out tes can be reproduced within limits that a nearly as close as for compression tes and that a high degree of correlati exists between pull-out and compressi tests. Mr. Tremper reported that h data indicate that the pull-out test c be applied to the actual concrete structures with less error in estimati compressive strengths (that are a above about 3,500 psi.) than is often o tained through the use of separate cast test cylinders.

The dynamic or sonic method of d termining the modulus of elasticity concrete is also a relatively new test which two papers were devoted. Thom E. Stanton, materials and research eng neer, California Division of Highway reported tests showing close correlati at ages from 4 days to 1 year of dynam E determinations on both beam a cylinder specimens. The tests indica also that the 28-day secant modulus 1,000 psi. is about 62 percent of t dynamic E at same age. Such a co parison may be useful, and Mr. Stant suggests the need for further tests check it and to determine what variabl affect it. The other paper involving t sonic method covered an investigati of the effect of cracks on the natur frequency of beams. The author, Phi G. Krimser (Kansas State College using cast iron beams, concluded th the effect was negligible. The te he said, led to the conclusion that loss of E as determined by means vibrations indicates deterioration of t beam, although the type and extent the deterioriation is not certain.

Steel developments

Committee A-1 on steel, throu chairman N. L. Mochel, reported ma activity and investigations underway many subcommittees. Changes in rather large number of standards w recommended, stimulated by sustai high production of steel products a by moving up one year the publicatio the new book of A.S.T.M. standards

Some of the proposals are for wi drawal of emergency alternate pr sions and incorporation of certain these in the regular specifications. in general special provisions are be continued. It is expected that even ally many of the provisions of W Production Board steel limitation or L-211 will become part of the regu

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everal laws of engineering interest nacted by 2d session, 78th Congress

Others have been reported out of committee, while many more wait committee action. Provision made for extensive public works program, including highways, rivers and harbors, reclamation, flood control, and community facilities.

When Congress began its summer re- June 23, a number of bills of cial interest to engineers and con- ction contractors had become law e the first of the year, some others been reported out of committee, dozens were still awaiting action various committees. Enactments by Congress that were approved dur- 1943 were listed in *Engineering s Record* February 24, pp 240-241. Among the new laws passed this r is the 1944 deficiency appropria- n act. Designated as Public Law 9 (H. R. 4346) and approved April it appropriates an additional $115,- 0,000 to the Federal Works Agency community facilities; $31,650,000 to eteran's Administration for hospital cilities, of which three percent is ailable for plans and specifications; eaning and repairing District of lumbia sewers $33,900; Bureau of eclamation for Colorado River im- ovement and levee system $250,000; ederal Power Commission for flood ntrol surveys $13,000; War Depart- nt for sanitation in Panama Canal ne $268,000.

Others enactments include the follow- g:

Public Law 224 (H. R. 3741) ap- oved January 28—authorizes $281,- 0,000 for construction of naval shore cilities.

Public Law 224 (H. R. 3741) ap- oved April 4—increases by $30,000,- 0 the authorization available under e Defense Highway Act for access ads, not more than $5,000,000 of this ount to be used in maneuver areas.

Public Law 318 (H. R. 3750) ap- oved May 29—authorizes $12,000,000 emergency flood control by Corps of gineers.

Public Law 329 (H. R. 3750) ap- oved June 5—provides for partial con- uction of Hungry Horse Dam on uth Fork of Flathead River in Mon- a for multiple-purpose use.

Of the bills reported out by commit- es, some of which have been passed one or both branches of Congress, e $1,500,000,000 authorization bill for stwar construction, H. R. 4915, which o provides for establishing a 40,000,- le National System of Interstate ghways, is one which both engineers d contractors are watching with in- terest. It supersedes H. R. 2426, which authorized $3,000,000,000 of expenditures, and other similar bills. It was reported out by the Roads Committee June 5 and placed on the Union Calendar.

Other bills recommended for passage by the various committees include:

Rivers and Harbors

H. R. 3961—Rivers and Harbors Omnibus bill, which authorizes expenditure of $498,784,931 for construction of 290 projects by the Corps of Engineers, and authorizes preliminary surveys for over 200 additional projects. Reported in Senate May 25. Reported out by Commerce Committee.

H. R. 4183—War Department Civil Functions appropriation bill, which makes appropriations for fiscal year ending June 30, 1945, and includes $57,- 504,100 for construction and maintenance of projects for rivers and harbors and flood control by the Corps of Engineers. Passed both branches: Senate asked for conference June 16.

H. R. 4485—authorizes $810,000,000 expenditure for flood control by Corps of Engineers; $10,000,000 for surveys by Departments of War and Agriculture; $1,500,000 for surveys by Federal Power Commission. Passed House. Referred to Senate Committee on Commerce May 10.

H. R. 4559—Navy appropriation bill for 1945, which appropriates $281,060,- 000 and authorizes $1,474,931,400, for construction by the Bureau of Yards and Docks. Senate agreed to conference report June 15.

H. R. 4861—District of Columbia appropriation bill for 1945, appropriates $1,825,000 to street division of Department of Highways for capital outlay for construction plus $970,000 unexpended funds of which $200,000 is to be available for engineering investigations, plans, surveys; capital outlay for construction by sewer division $1,051,- 308, and water division $320,000 plus $320,000 for Washington Aqueduct; $93,674 for plans and specifications for 11 schools to cost $5,081,850; to the municipal architect $16,600 for borings and soil investigations; $5,000,000 for investment in U. S. securities to provide for later construction of projects postponed on account of war.

The many bills not yet acted upon by the committees to which they were first referred concern a variety of subjects, including reclamation, flood control, engineering, contracts, highways, abatement of pollution, housing, postwar planning, surplus war equipment, and a miscellany of subjects. They include the following bills:

Reclamation

S. 1915 H. R. 4795 authorizes undertaking of the initial stage of the Bureau of Reclamation's comprehensive plan for multiple-purpose projects in the Missouri River basin. The plan calls for initial postwar construction amounting to $200,000,000 of the total $1,257,647,700 program.

Flood Control

S. 1812—authorizes $449,000,000 for construction by Corps of Engineers of flood control works in the Ohio, Upper Mississippi, Missouri, Arkansas, White and Ouachita river basins, and sets up a Missouri River commission to plan and construct improvements for navigation, flood control, power and pollution abatement, with board members paid $10,000 a year. Also gives chief of Corps of Engineers supervision over all river dams. (See S. 1599.)

H. R. 5127—Creates the Savannah Valley Authority to erect dams, reservoirs, canals and other works to control floodwaters of Savannah River and its tributaries, and for navigation improvements and power production.

Engineering

H. R. 730—authorizes from $25,000 to $50,000 a year for one engineering experiment station at some university in each state for training research workers in industrial and other fields.

S. 702—establishes the Office of Scientific and Technical Mobilization, and authorizes $200,000,000 for its use, to promote science and technology both in war and peace.

S. 1901—authorizes appointment of an officer of Sanitary Corps as assistant to the Surgeon General of the Army, with the rank of Brigadier General. Highest ranking officer now is colonel.

Highways

H. R. 392—sets up an independent commission and director to issue U. S. bonds in an amount of $10,000,000,000 for postwar construction of a toll system of eight-lane military superhighways and airports, and of dams and power plants to furnish light for entire system.

H. R. 2799—authorizes a $12,000,- 000,000 construction program for an

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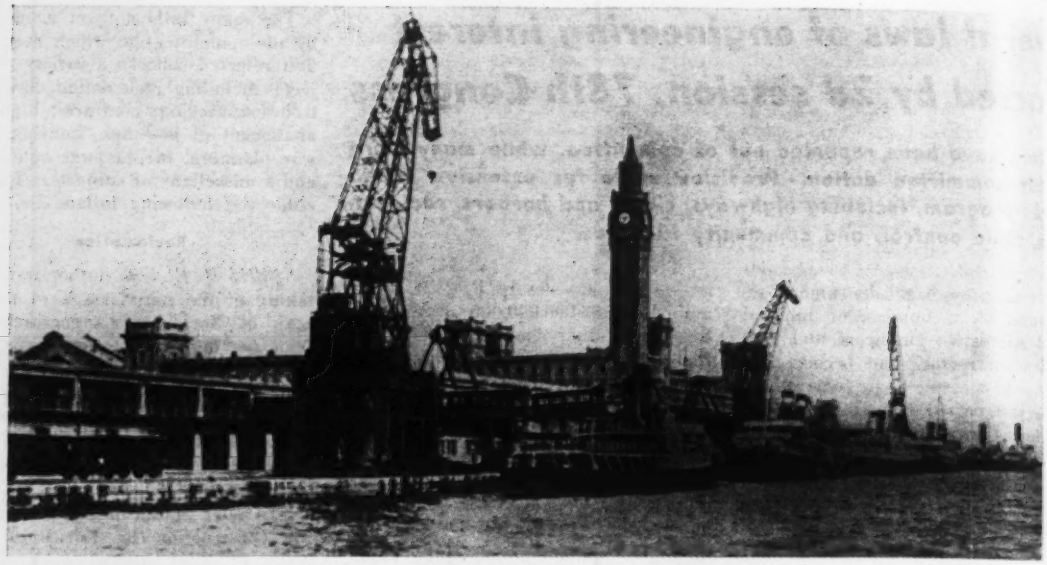


Fig. 1. The great Quai de France at Cherbourg has 2,090 ft. of berthing face for deep-draft vessels.

Cherbourg—First Invasion Port

This report on harbor facilities at Cherbourg, France, is based on an interview with H. O. Christiani and Paul Larsen of the Danish firm of Christiani & Nielsen, which since the invasion of Denmark has had its head office in New York. One drawing and some of the prewar photographs are from a description of the port published by *The Engineer*, London, in 1934.

Cherbourg, first invasion port in France to fall into the hands of the Allied Nations, was captured by American troops on June 27. How much damage the Germans did to the port facilities is not known as this is written, but there is good reason to believe that the structure of the principal modern installation, the Quai de France (Quay No. 1), may not have been seriously damaged due to its form and substantial construction. That quay was built by Christiani & Nielsen in the period 1928-1933, as were the railroad facilities on the quay and the substructure for the incomplete Quay No. 2.

Cherbourg has been a port for shallow-draft vessels since the early days of French history. Because of its strategic position on the English Channel, it was heavily fortified and in ancient times was of more significance as a military establishment than as a commercial port. During the present war it appears to have been used by the Germans as an E-boat station and possibly as a submarine base.

Development of Cherbourg as a harbor was begun by Louis XIV, who built the Homet jetty to protect the military establishment at the west side of the inner harbor. Further expansion was undertaken by Napoleon, who in 1784 started work on the 2¼-mile long breakwater across the mouth of the bay on which Cherbourg is located. Built largely of stone in water that is 42 ft. deep at low tide, that structure was not completed until 1858. It provided a sheltered roadstead of 2,000 acres where large ships may anchor. This roadstead is expected to be of great value to the present invasion forces regardless of the condition of other harbor facilities.

Wide tide range

The extreme tide range at Cherbourg is 23 ft., hence the early port facilities were chiefly of the enclosed wet-dock type to which vessels are admitted through lock gates at high tide. All were for small, shallow-draft vessels.

These port facilities include the commercial docks in the town itself and those in the military establishment at the west side of the inner harbor, chiefly the Charles X and Napoleon III docks.

Before modernization of the port w undertaken, large vessels had to anch in the outer harbor where they we served by tenders.

Because of its strategic position wi respect to transatlantic passenger tra fic and its protected roadstead, Che bourg began to develop as a port f passengers bound for Paris about 190 It was handicapped, however, by i lack of berthing facilities for large pa senger vessels, passengers having to taken off and delivered by tender. As result, plans for expansion of the po were begun just before the last war, b they did not take form until 1923 wh contracts were let for construction of t Flamands Jetty and for a mole havi a berthing length of 600 meters at t east side of the entrance to the old co mercial port. The berthing area was be dredged to a depth of 16.4 ft. at lo water.

Sand dredged from the channels w to be used to build the mole, which w to be formed between mounds of rubb stone topped out with concrete an masonry walls. Because of the wi range in tide levels, berthing faciliti

ere to be provided by wharves supported on reinforced concrete piles iven to rock at El—13 m. (—43 ft.).

Port plans changed

Before that work was completed radical changes were made in the program permit the largest liners afloat to deer passengers direct to fast passenger ains bound for Paris. These plans lled for conversion of the mole into a ay to which the liners could tie up, d for construction of a great railroad rminal on the quay. Also projected ere other quays to the east of the mole. Contract for construction of Quay o. 1 was let in 1928 to the firm of hristiani & Nielsen, which had a anch office in France. Subsequently, contract for the railroad terminal cilities on the quay, the Gare Mariime, was let to the same firm.

A substantially built quay

A cross-section through Quay No. 1 given in Fig. 4. This shows, at the ft, the original mole construction, nd at the right, how the mole design as developed into a wharf against hich ocean lines could berth. Reinorced concrete caissons 100 ft. long nd 20 ft. wide were sunk by pneuatic methods alongside the concrete-ile dolphins of the shallow-draft wharf f the mole, the cutting edges of the issons being carried to a depth of bout one meter below the rock surace. Subsequently the whole area beween Quay No. 1 and Quay No. 2 was redged to rock, which varied in depth elow low water from 46 ft. at the uter end of the slip to 33 ft. at the nner end.

The caissons were carried to above w water. After they had been sunk and filled with concrete they were topped out with a stone-faced quay wall, 20 ft. thick, carried to wharf level.

Heavy concrete beams spanning from this wall back to the mole wall carry a reinforced concrete deck, which in turn carries a shallow earth fill on which the wharf-side track are laid.

Openings through the caissons equalize hydrostatic pressure. Adjoining caissons are interlocked by a concrete filler poured in a space formed by grooves cast in the end of each caisson.

The modern port had a capacity of 12,000 tons a day, much of which was handled through the older port installations. The new facilities on the Quai de France (Quay No. 1) were designed primarily for handling passengers in transatlantic service.

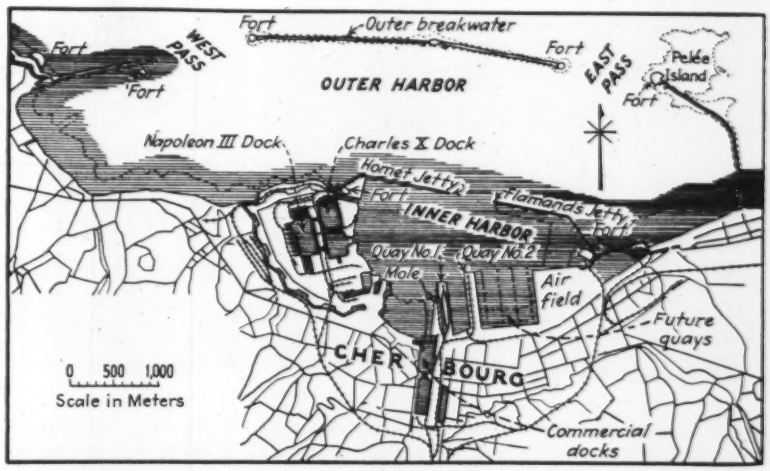
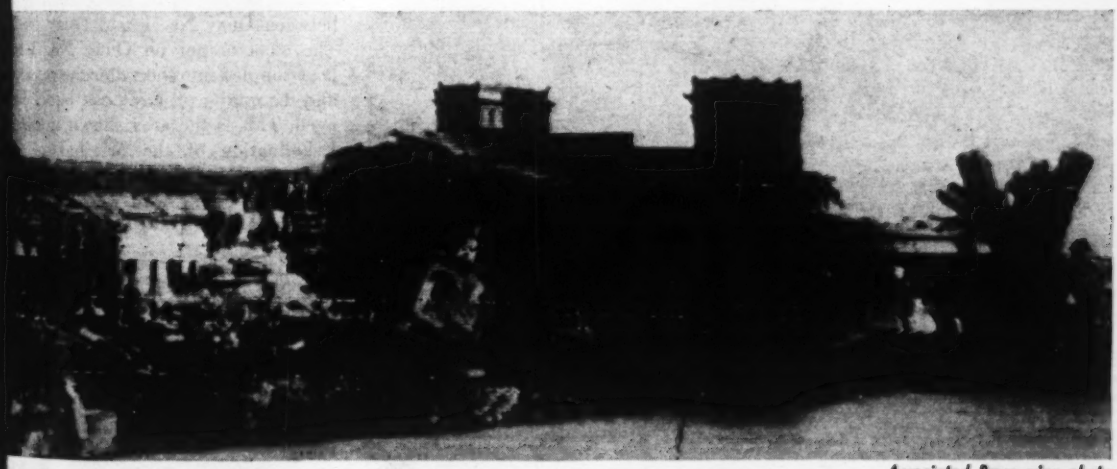


Fig. 2. Cherbourg's great asset is its sheltered roadsteads where large ships can anchor free from storm. Berthing facilities for large ships were available at the east side of Quay No. 1. Most of the old harbor facilities were of the enclosed wet-dock type, a design that was made necessary by tide variations, which have an extreme range of 23 ft. It is doubtful that the rail line shown as extending out onto Quay No. 2 actually is there as work on that quay was stopped before it was completed.

Possible point of attack

In discussing the unusual form of Quay No. 1, members of the firm of Christiani & Nielsen pointed out that if the Germans charged with destroying the port facilities were familiar with its design they probably would have attempted to destroy its usefulness for berthing ships by overturning the caisson wall, which is about 70 ft. high. Large charges of explosives placed in the opening behind the wall, if



Associated Press wire photo

g. 3. Wreckage of the Gare Maritime. German reports that the high tower (See Fig. 1) was dropped into the slip to ock it are belied by this picture, as the top of the tower is clearly to be seen in the wreckage on the wharf. The ject standing out at an angle at the right in this picture presumably is one of the landing bridges blown into that ellar position by the wrecking operations. Beyond it is another wrecked tower.

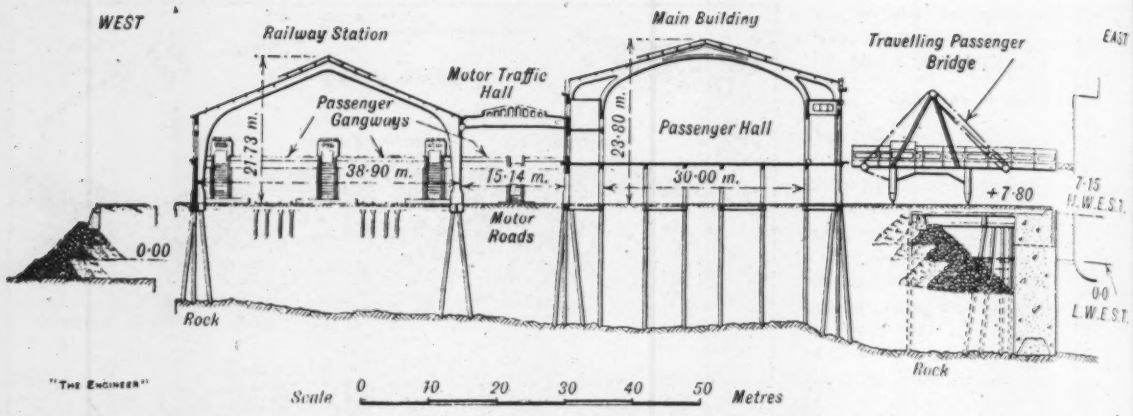


Fig. 4. Cross-section of the Quai de France (Quay No. 1) on which the Gare Maritime is located. Berthing facilities for deep-draft vessels were provided by sinking concrete caissons outside the wharf of the original mole (right) and by dredging to rock at El. — 13m. The passenger hall and railway stations are of reinforced concrete.

detonated simultaneously, might have overturned it. On the other hand, persons unfamiliar with the design would not suspect the existence of a large open space back of the wall.

The railroad terminal

The great railroad terminal on Quay No. 1 was designed by a French architect, Rene Lavavasseur. It is of reinforced concrete construction, large rigid frames being used to form the passenger hall and trainshed. The picture reproduced herewith as Fig. 3 indicates that these structures on the quay were badly damaged by the Germans but that when the wreckage is cleared away, some parts of the terminal buildings may still be usable.

If the easterly quay wall is intact, it will provide berthing area for several good sized ships at one time once the wreckage of the terminal has been cleared away as it is 620 m. long (2,034 ft.). Landing barges could use the westerly side of the quay.

It is probable that the uncompleted substructure for Quay No. 2, could be made available for servicing ships in a comparatively short time. Caissons for it were sunk by Christiani & Nielsen, but due to financial condition in France in the early '30's, it never was completed.

The slip between the two quays is 750 ft. wide, over 2,000 ft. long and 46 ft. deep at low water at its outer end, hence it could not be blocked easily.

Presumably the small wet docks of the Arsenal and old commercial port were badly damaged by the Germans, but their destruction would be no serious handicap to our forces.

Reports from London indicate that both the Army and Navy had reconstruction forces in Cherbourg before the Germans were all out.

Gen. Moore visits port

The German's demolition work at Cherbourg was no worse than was expected, and can readily be made good in accordance with plans drawn up many months ago, said Maj. Gen. Cecil R. Moore, chief engineer, European Theater of Operations, U. S. Army, after he had visited the port installations following their capture.

General Moore said that he was in the harbor before the surrender of General von Schlieben, and that within a short time our forces had heavy construction equipment—bulldozers, cranes, shovels and pile drivers—at work clearing up the port.

All the ships and floating equipment in the port had been sunk, according to General Moore, one large vessel having been sunk in the entrance to the slip between Quay No. 1 and Quay No. 2. The steel cranes on Quay No. 1 had been toppled into the water, he reported, and the quay wall had been badly damaged. This is the area shown in Fig. 3. Examination of the original of that photograph indicates that large sections of the top of the wall were blown out, but there is no evidence that it was overturned.

General Moore said that the enemy had been unable to block the entrances to the harbor because they are so wide and deep, but that the Germans had filled the roadstead with mines, which are being swept up by the Navy men.

Railroad tracks throughout the terminal were torn up and the signal system was disrupted. The longest bridge in the harbor area also was wrecked.

Presumably, part of the destruction was done by the Allied forces during their air attack on the port.

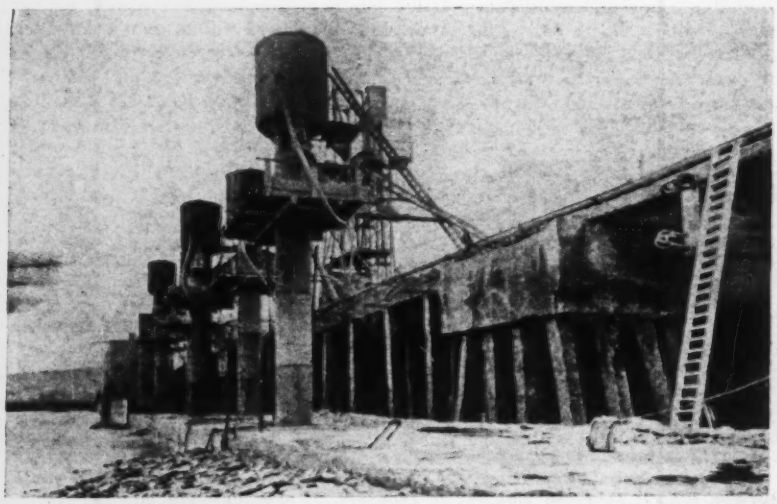


Fig. 5. Reinforced concrete caissons being sunk for the quay wall. Behind the near caisson is one of the concrete dolphins of the original wharf. The substantial construction indicates the difficulties involved in destroying this quay.

Houston seeks to buy FWA canal

A peculiar series of negotiations is climaxed in the recent announcement by City Manager John N. Edy of Houston, Texas, that the contract for buying the west canal of the Harris County War Industries Water Supply Project from the Federal Works Agency was completed and had been sent for approval to the FWA regional office at Fort Worth. The contract sets a price of about $875,000 on the west canal.

The project consists essentially of a pumping station at the San Jacinto River's edge, two open unlined canals, two earthen reservoirs, and a booster pumping station. It was undertaken by FWA (*ENR* Nov. 12, 1942, p. 673) as a war emergency public works job to settle the jurisdictional and water rights difficulties arising between Houston and the San Jacinto Reclamation and Conservation District. The water department of the city was commissioned by the FWA to act as design and supervising engineers for the project.

Completion of the contract sent to FWA follows signing of a contract by Houston and the San Jacinto Conservation and Reclamation District on May 27 providing that, in case of a water shortage, Houston would get 11/16 of the water obtainable from the San Jacinto River, and the San Jacinto Conservation and Reclamation District would get the remaining 5/16 of the water. However, FWA retains for the duration of the war the right to allot the water, during water shortages, to the most essential war industries regardless of location.

When Houston builds its proposed dam and reservoir on the San Jacinto River at Sheldon this stipulation of the contract will terminate as the Sheldon dam is expected to eliminate water shortages.

The May 27 contract, which is contingent upon its consummation, provides that Houston will buy the pumping station and west canal running from the San Jacinto River, and the San Jacinto Conservation and Reclamation District will buy the east canal and the force main under the river.

Houston will pay for the west canal with cash to be obtained from the $14,000,000 water improvement bond issue approved by the voters June 17, which also provided for six new wells and a pumping station west of Houston and added distribution facilities.

Oregon construction men get wage increase

A wage increase of approximately 10 cents an hour for workers in the construction industry throughout Oregon has been agreed on by the Oregon State Building & Construction Trades council and the Construction Employers organization.

The new scale, raising the pay of Oregon construction workers above that paid in northern California and in Washington, will go into effect 30 days after approval by the adjustment division of the War Labor Board.

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New Mississippi span at New Orleans proposed

The Louisiana state senate on June 21 passed a bill by unanimous vote that provides for a bridge to be constructed in the postwar period across the Mississippi river from near Canal St., New Orleans, to the Algiers section.

The bill was introduced by Senator William J. Bruber who waged an unsuccessful fight to pass another bill that would have provided for the creation of a Mississippi river transit commission empowered to float $40,000,000 worth of bonds for the construction of a bridge or a tunnel.

Highway department representatives revealed that funds totaling $395,430 have already been appropriated by federal and state governments for preliminary plans and that studies and designs for the bridge are already being prepared.

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Big landslide ties up California highway

Employing power shovels and bulldozers, crews of the California state highway maintenance department labored for nearly a week recently to clear a double traffic lane through a landslide which buried a 500-ft. section of Roosevelt highway, near Los Angeles, under thousands of tons of earth.

State highway engineers said that a portion of the buried roadway was covered to a depth of 70 ft. by shale and rock which slid down a nearby mountainside. They estimated that at least 80,000 cu. yd. of material formed the first slide which occurred June 12. Efforts to clear the highway for traffic were seriously impeded by a series of subsequent minor slides which sent an additional 40,000 cu. yd. of earth and rock across the highway and down a 50-ft. embankment into the ocean.

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Extortion charge made against Pa. labor boss

Acting upon the request of Judge Frank P. Patterson of Pittsburgh, Pa., Ross Adams, former labor leader, has filed an amended bill in common pleas court charging that Nick Stirone, with whom he was formerly associated in handling common labor in the heavy construction industry in Western Pennsylvania, "extorted thousands of dollars from contractors who built the $65,000,000 Pennsylvania Turnpike under the threat of tying up their jobs."

Adams also charged in the bill that Stirone got a $4,000 shakedown on the contract for relining Pittsburgh's Liberty Tubes, and a reputed $14,000 shakedown on the relocation of Highway 22.

Adams is suing for reinstatement as a member of Local 1058 of the International Hodcarriers' Building and Common Laborers' Union from which Stirone ousted him in 1943.

He is suing also to oust Stirone from control of the union, and for an accounting of all union funds.

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New map-making idea wins award for W. T. Ryall

For developing a device which is said to have greatly improved methods of mapping large areas and difficult terrain William T. Ryall, civil engineer with the Little Rock, Ark., district, U. S. Engineers, on June 30 received the Exceptional Civilian Service award, the highest civilian honor bestowed by the War Department.

Engineers says Mr. Ryall's invention has revolutionized the establishment of secondary controls for mapping and surveying of highly specialized projects, and has cut the cost in money, manpower and time, while practically eliminating the margin of human error.

Though the use of small helium gas balloons and short wave radio communications, a crew of 20 men can survey as great an area in a day as that formerly surveyed by 50 men. The cost has been reduced about 50 percent, it is said.

Developments discussed at A.S.T.M. meeting

(*Continued from page 2*)

standard specifications of the A.S.T.M.

Action taken on steel specifications of interest to civil engineers include: (1) A request by the subcommittee on structural steel for bridges, buildings and rolling stock to reaffirm five of its specifications despite the fact that one of them, A7, (structural steel for bridges and buildings) perhaps the most widely used A.S.T.M. standard, was modified in 1942. (2) Tabling of a proposed change in manganese content of quenched carbon-steel joint bars (A 49–39.) (3) A plan to renew studies on weldability of structural steel along the lines of limiting carbon and manganese as thickness increases.

In reporting on alloys, Committee A-10 stated that an investigation on stainless steel trim for buildings would be undertaken this year to supplement a report made six years ago.

Corrosion studies continue

Some 12,000 steel specimens, mostly wire or wire products, are under test at fourteen locations where investigation and reports are continually made on their condition. Some flat sheets are included in the test specimens, both coated and uncoated. On sheets under test at Key West, Fla., an unusual type of failure has been noted; the protective coating and metal failed by rusting through from the bottom, rather than on the top side exposed to the weather. This has not been observed elsewhere, however.

Specification writing on corrosion resistance has been mostly war-prompted, according to C. D. Hocker, chairman of the committee. The situation changes constantly and at the moment involves withdrawal of several emergency specifications, particularly those intended to conserve zinc, now much more readily available.

New tentative standards for preparation of (1) micrographs of metals and alloys and (2) metallographic specimens are proposed to make them more compatible with modern practice and equipment. Advance in color photography in this branch of testing was covered in the *A.S.T.M. Bulletin* for May, 1944.

A temporary subcommittee under the Malleable Iron Castings Committee (A-7) has been established to investigate welding of malleable iron.

Reflecting interest in the relatively new science of powder metallurgy involving manufacture of bearings, structural parts cemented carbides, friction materials and some electrical parts, A.T.S.M. has established a new committee (B-9) on metal powders and metal powder products. At present there are three subcommittees. One will prepare a compilation of definitions of terms peculiar to powder metallurgy and assemble fundamental data on the product. The second will prepare methods of test and specifications for metal powders, while the third subcommittee is intrusted with testing and specifications for metal powder products.

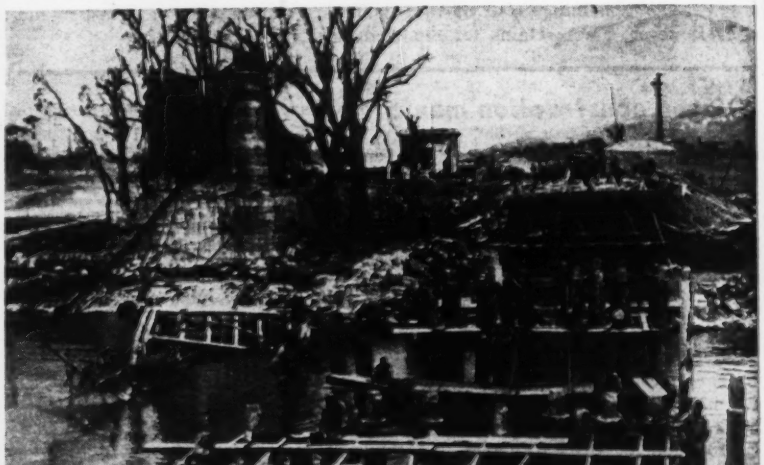
Fatigue test specimens

Few reports created more discussion at the convention than the third progress report on the effect of size of specimen on the fatigue strength of three types of steel. The report was made by D. Morkouin and H. F. Moore of the University of Illinois. After emphasizing that much further work is necessary before definite conclusions can be reached, the authors stated that laboratory studies at the University of Illinois indicate that the size of a specimen is an important factor in the fatigue strength of the steels investigated, which included specimens varying in size from 1⅞ to ⅛-in. dia. They suggested that further work may reveal that it is most satisfactory to base the endurance limit of a large member on some function of the microstructure of the metal and on a slight modification of the Neuber theoretical stress-concentration formula or diagram.

It was this suggested formula and the variation in fatigue strength noted by other workers that resulted in the extended discussion. General conclusion was that the report opened up a promising line of attack, but that much further work is necessary before final judgment can be pronounced on the reliability and usefulness of the concept of "size effect" on fatigue strength of metals.

Other specification actions

As a result of recommendations of Committee D-4 the method of test for **hot extraction of asphaltic** materials and recovery of bitumen by the modified Abson procedure was adopted as a new tentative standard, while a number of important existing tentative standards were given a standard status. The latter included: crushed stone, crushed slag, and gravel for water-bound macadam base and surface courses of pavements (D694–42T); crushed stone and crushed slag for bituminous macadam base and surface courses of pavements (D693–42T); and



British Combine photo

Fifth Army Engineers replace Italian bridge

Typical of the bridge replacement jobs tackled by American engineers in Italy is this pile bridge being built across an unidentified river in the Minturno area to speed the advance of the Fifth Army. At the left are the towers of the ancient suspension bridge across the river. This span was destroyed either by the retreating Germans or by Allied air attack. The partly submerged trestle bent in the river would indicate one temporary bridge had been lo[st] in a flood.

On the cover of this issue is shown Major Samuel M. Cardone of Ann Arbor, Mich., at the progress chart put up on one of the old bridge piers. In 21 hours, 25 percent of the bridge had been built.

he tentative volume correction table or tar and coal-tar pitch (D633–41T).

Committee D-7 on Timber reported he organization of a subcommittee on re-retardant wood. There has been ome agitation for revisions of specifications for creosote-coal tar solution D391–36), but changes were not presented at the convention. No revisions have been recommended in the zinc-hloride field. A "Proposed Method of Testing Veneer, Plywood, Wood and Wood-base Laminated Materials" was presented to the convention and recommended for the status of a tentative standard.

A slight change in the rapid sugar method for chemical analysis of limestone, quicklime and hydrated lime (C25–29) was the only specification action of the lime committee. However, it reported that revised specifications for masonry and finish limes are under consideration and that a special committee is working on the use of the autoclave test to determine the soundness of lime.

Emergency alternate specifications adopted by the committee on bituminous waterproofing and roofing material included those for asphalt shingles surfaced with coarse mineral granules. These specifications, which have been designated EA-D 225, will replace Specification D 225–41 T, which has the disadvantage of not providing for the use of the heavy-butt or tapered type of shingle.

The tentative specifications for aggregate for masonry mortar (C144-42T) were adopted as standard by committee C-12 on mortars for unit masonry. This committee also reported that a subcommittee has revised the tentative specifications for mortar for reinforced brick masonry (C 161-41T). The revision includes added requirements relating to quality of materials, such as limitations on the use of admixtures, and antifreeze compounds.

The specifications for hollow load-bearing concrete masonry units (C 90-39) was revised by the committee on manufactured masonry units to provide for an increase in the compressive strength of units exposed to the weather. The change also required that the units comply with the absorption requirements irrespective of the nature of the exposure.

Committee C-15 of A.S.T.M. recommended for approval a tentative revised specifications for glazed building units (C 126-39T). The specifications include new requirements for ceramic glazed units of two types, for important elements of shape and design, and for tolerances on dimensions and shapes. Requirements for compressive strength were also added.

Engineers study plans for Denver freeway

One of the chief postwar projects for Denver, Colo.—a freeway to distribute motor traffic entering the city to outgoing arteries and to business and residential sections without overcrowding existing streets—will be the subject of an engineering study by the State Highway Department, Charles D. Vail, state highway engineer, has announced.

An existing road follows the Platte River through the city. It is planned to extend this by a roadway along the river to a connection with highways entering Denver from the north and east. Distribution of city-bound travelers will be made at one or two points along the proposed route by ramps and cloverleaves. Elevated roadways will carry traffic over railroad yards. Under the plan through travelers will be able to traverse Denver with a minimum of traffic delay.

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Many cement factories to be built in Mexico

Plans for the establishment of a chain of cement factories throughout Mexico, developed by the American-Mexican Economic Cooperation Committee, have been approved by President Manuel Avila Camacho. The purpose is to produce cement for the construction of dwellings, hospitals, schools, roads and general public services.

The plans call for factories to be established at: Hormosilla, Sonora state; Mazatlan, Sinaloa state; Monterrey, Neuvo Leon state; Leon, Guanajuato state; Gualajara, Jalisco state; the Federal District (Mexico City); Jasso, Hidalgo state; Apasco, State of Mexico; Cuernavaca, Morelos state; Puebla City, Puebla state; Orizaba, Vera Cruz state; Lagunas, Oaxaca state; and Merida, Yucatan state.

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Group named to study Lake Erie erosion

A special committee of the Ohio Postwar Program Commission, headed by William H. Boyd of Cleveland, has been named by Lt. Gov. Paul M. Herbert, commission chairman, to recommend ways and means of stopping erosion of the Lake Erie shore.

Technical members of the committee are: Robert Hoffman, consulting engineer to the city of Cleveland Engineering Department; William H. Gould, Toledo engineer and Leonard J. Stern, executive secretary in the state department of public works.

Montgomery to Chicago as division engineer

Col. Harry A. Montgomery is the new division engineer of the Great Lakes Division, U. S. Army Engineers, at Chicago, succeeding Col. Clark Kittrell who recently received an overseas assignment. Since April, 1943, Col. Montgomery has been executive officer of the Supply Division, Office of the Chief of Engineers, Washington, D. C.

Col. Montgomery's Army engineering career began with his graduation, in 1918, from West Point where he received a Bachelor of Science degree. He served overseas for a short period with the AEF, taught military science and tactics at Rose Polytechnic Institute, and, in 1928, was transferred to the Panama Canal Zone with the 11th Engineers.

In 1935, Col. Montgomery was made acting district engineer of the Pittsburgh, Pa., Engineer District. The following year he was placed in charge of the design and construction of the Possum Kingdom Dam, on the Brazos River near Mineral Wells, Tex. He organized the Tulsa District Office of the U. S. Engineers in 1939 and became its first district engineer. Early in 1942 he was named director of operations, Whitehorse, Yukon Territory, Canada, and later was made deputy chief of staff of that command, where he served until transferred to the Office of the Chief of Engineers.

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Large bus terminal planned for New York

Funds have been made available to the Port of New York Authority to prepare detailed plans and specifications for the construction of a large union bus terminal in New York City near the Manhattan portal of the Lincoln Tunnel. The terminal is to be built as a self-liquidating postwar project and is expected to cost $9,000,000, about one-third of this amount to be spent for the necessary land and the remainder for construction.

In 1943 over 2,000 buses entered New York daily and the problem created by bus and passenger car traffic is one of the greatest the city faces, according to the planning commission, that made $180,000 available to the Port Authority to plan the terminal.

Laws and bills of engineering interest

(*Continued from page* 3)

18,000 mile system of three transcontinental and six north-south highways; and a system of airports, each two miles square, located at 18 intersections of the proposed highways.

H. R. 4718—authorizes $1,125,000,000 for postwar construction of rural local roads.

H. R. 4985—authorizes construction of the National Mississippi River Parkway from headwaters of the river in Itasca State Park, Minn., to the Gulf of Mexico.

S. 821 H. R. 2113—make unobligated funds appropriated for construction of rural post roads available for a year after the war and permits their use for engineering, plans, and acquisition of rights-of-way, and also make funds available for access roads to sources of raw materials without regard to the present $10,000,000 limitation.

S. 1162—provides that federal aid funds previously apportioned to states may be expended for repair and reconstruction of highways and bridges destroyed by floods or other disasters, without regard to the present $10,000,000 limitation. Funds so used would be repaid to the federal government.

S. 1297—provides for a defense highway in the United States to serve as a link between the Inter-American Highway and the Alaskan Highway.

S. 1610 H. R. 3959—authorize an additional $55,000,000 for access roads of which $5,000,000 could be expended for maintenance of roads used for maneuver purposes during the war.

Pollution Abatement

S. 1989 H. R. 4741—authorize $50,000,000 a year for grants-in-aid and loans by Sanitary Engineering Division of U. S. Public Health Service to states for construction of treatment works, and an additional $1,500,000 a year to states for surveys and engineering reports; set up a water pollution control advisory board.

Postwar Planning

S. 846 H. R. 3058—authorize appropriation of $25,000,000 a year to be advanced to municipalities for making plans for postwar public works construction.

S. 1137 H. R. 2783—authorize appropriation of $10,000,000 a year to states for postwar public works construction plans.

Housing

S. 2029—authorizes annual appropriations, beginning with fiscal year ending June 30, 1945, $5,000,000 for preparation of comprehensive plans and programs to expedite rural electrification, and the employment of persons or the use of agencies for this purpose.

S. 2046—establishes, within the National Housing Agency, the Office of Housing Research to prepare coordinated programs of technical research to be headed by a Director of Housing Research, appointed by the president to serve six years at a salary of $10,000.

H. R. 5088 and H. R. 5177—authorize appropriation of $45,000,000 for construction of additional housing for armed forces and their dependents.

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Building electricians wanted for emergency

The Army has issued an appeal for electrical workers with construction experience for war emergency work at Hanford Engineer Works, Pasco, Wash., and Clinton Engineering Works, Clinton, Tenn.

Electricians of all classes are asked to take 90-day leaves-of-absence from present jobs to help in "vital war construction jobs". Employers are asked to cooperate by encouraging the temporary leaves.

Jobs, with overtime, pay about $100 per week. Full information may be obtained from local U. S. Employment Service offices or International Brotherhood of Electrical Workers.

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Many Pennsylvania spans are now inadequate

According to figures released by John U. Shroyer, secretary of highways of Pennsylvania, a total of 4,812 of the 17,300 bridges on the state highway system are posted for incapacity to meet their full legal requirements. The bridges are being used, but carry warning signs showing the limit of tonnage that may safely pass over them.

Since passage of an act by the last legislature, on May 26, 1943, amending the vehicle code, the legal carrying capacity of bridges is now 15 tons.

JOBS OF THE WEEK

INFIRMARY BUILDING, Coatesville, Pa.

Veterans Administration, Washington, D. C., received the lowest bid on infirmary buildings at U. S. Veterans' Hospital from Joseph Weinstein, Inc., Brooklyn, N. Y. at $993,333.

MINING DEVELOPMENT, Sudbury, Ont.

International Nickel Co. of Canada, Ltd., Sudbury, removing 2,000,000 tons of rock from open pits in Froad and Stabie Districts to cost $3,000,000 to $5,000,000. Don Construction Ltd., Toronto, will do the work.

HOUSING, Royal Oak, Mich.

Public Housing Authority, Detroit, Mich., received the lowest bid for constructing housing project, from W. E. Wood Co., Detroit, Mich., at $1,197,000. Otis, Winn and P. Brezner, Detroit, are the architects.

AIRPORT, Quincy, Ill.

Civil Aeronautics Administration, Chicago, Ill., awarded a contract for the constructing of an airport, including three runways, drainage, seeding, fencing, etc. to Cheney-Wright, Williamston, Mich. The estimated cost is $1,000,000.

PARKING APRON, Hamilton Field, Calif.

U. S. Engineers, San Francisco, awarded the contract for the construction of parking apron to Frederickson & Watson, Oakland, at $999,033.

RUNWAYS, Fairfield-Suisun, Calif.

U. S. Engineers, Sacramento, awarded the contract for widening runways at Fairfield Suisun Air Base, to J. A. Casson and N. M. Ball Sons, Hayward, at $1,192,963.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 15.

MEETINGS

NEW ENGLAND TRAFFIC ENGINEERING CONFERENCE, Massachusetts Institute of Technology, Cambridge, Mass., July 13-14.

NORTH CAROLINA LEAGUE OF MUNICIPALITIES, annual meeting, Robert E. Lee Hotel, Winston-Salem, N. C., Aug. 23-25.

PENNSYLVANIA WATER WORK OPERATORS' ASSOCIATION, eastern Pennsylvania section, Columbia, Pa., August 28-29.

BRIEF NEWS

Purchase orders for equipment and aterials for construction for the Army, avy, Maritime Commission, and other overnmental agencies will hereafter be ted at least AA-5 by the War Produc- on Board. Heretofore, all such orders ot assigned to higher rating were rated -10. This change is made by amend- ent to Priorities Regulation No. 1.

The distance between Houston and ort Arthur, Tex., will be shortened 20 iles, when a new highway is built be- een them after the war. The location r the multi-lane highway has been ap- roved by the Texas Highway Commis- on and the U. S. Bureau of Public oads.

A national archaeological museum to be built in Mexico City on the site f an obsolete barracks at a cost of 315,000, under orders of President anuel Avila Comacho. Jaime Torres odet, Minister of Public Education, ill have charge of the work to start mediately.

Nathan Adams, chairman of the reater Dallas Master Plan Committee f Dallas, Tex., is choosing chairmen r subcommittees, which will consider nprovements advocated by Harlan artholomew, master plan engineer, and ecommend a plan to finance the im- rovements and provide for the laws to uthorize the projects.

The Prince Edward Island legislature as been asked to authorize construc- on of a 12-mi. tunnel under Northum- erland Strait between New Brunswick nd Prince Edward Island. It would be r trains and motor traffic, replacing ice breaking ferry service interrupted y the foundering of one of the ferry eamers. An engineering survey has en proposed, under the dominion and rovincial governments, to determine e cost and feasibility of the plan.

Proponents of a $58,950,000 soil ero- on prevention program on the Trinity iver basin in north central Texas and $9,641,000 program for the middle olorado River watershed in Western exas, appeared before the House Flood ontrol Committee in Washington re- ently to urge the improvements in the ostwar planning legislation.

A soil conservation report covers 8,- 60,000 of the 11,280,000 acres in the rinity watershed. The cost of the im- rovements, to be carried out over a 15-year period, would be met by $32,- 000,000, $26,825,000 from farmers whose property would be enhanced in value and $125,000 by the state and local governments. Benefits expected from the work amount to $15,800,000 annually.

The California State Highway Commission recently approved the transfer of more than $3,000,000 from the state highway fund contingency reserve for highway repair work. The commission also appropriated $216,000 for the construction, repair and maintenance of bridges and roads in five northern California counties.

The office of the Federal Works Agency at Winston-Salem, N. C., which has been handling land transactions for the $8,000,000 High Point hydroelectric project on the Yadkin River, has been closed because the acquisition of titles in the reservoir area has been largely completed. The office has been under Ward D. Carpenter, project engineer, who is transferred to the regional FWA office at Richmond, Va. Some of the personnel of the Winston-Salem office will go to Richmond to continue work on the project. Thomas L. Harding, land agent, stays at Winston-Salem to obtain remaining land titles needed. Construction of the project is held up until materials are available, but it is planned to reopen the Winston-Salem office when work is resumed.

The Foundation Maritime Co., with base at Halifax, N. S., and executing dominion government contracts at a number of points in the maritime provinces, is believed to be the first construction firm in Canada to arrange Sunday religious services at a construction job. This was started at this firm's contract in Bridgewater, N. S. There is mass just before noon lasting a half hour, including a short sermon. This allows employees to participate in the service without going to the local church, thus eliminating tardiness for work.

Allegheny County, Pa., commissioners are considering buying for $125,000 an additional 400 acres of land to expand the new $12,000,000 Moon Township airport. Thus one runway could be extended to 10,000 ft., two other runways to 7,400 ft. The commissioners expect the government to take over the airport soon.

Faulty building construction was the cause of every death or injury resulting from fire in Nova Scotia in the last year, Fire Marshal S. S. Wright said in his annual report to the Department of Labor. Improper construction had permitted rapid spread of the flames, trapping occupants before they could escape.

The Lake June site, where Dallas, Tex., plans to have a super airport, has been approved by the Civil Aeronautics Administration, according to Mayor Woodall Rodgers. The area embraces about 5,200 acres. When engineering studies are completed, purchases of the site will be made.

Carter Halls Aldinger Ltd. of Winnipeg, Man., general contractors founded in 1907, is being dissolved and reconstituted into three organizations to be owned and operated by principals of the old firm in three Canadian centers. The new firms will be the Carter Construction Co. of Toronto, the Commonwealth Construction Co. of Winnipeg, and a third company, as yet unnamed, in Vancouver, B. C.

In an effort to supply Oregon civilians with heavy construction equipment they need to continue farming, mining and logging, the district WPB construction machinery division head, Edward L. Kropp, has appealed to dealers and distributors to list available equipment at his office. Emphasizing the importance of shovels, cranes and tractors in home front production, Kropp said the Oregon shortage is critical.

Runways of Hensley Field at Dallas, Tex., are being extended and repaved to enable the field to be used for testing purposes. 4,500,000 cu.yd. of earth will be used to fill in Mountain Lake, at a point where a creek empties into the lake and where the water is ten to twelve feet deep. The project will cost $5,000,000. The work will be done jointly by Peter Kewitt & Sons, Western Construction Co. and McDougal Construction Co. of Kansas.

Reorganization of the engineering staff of the Arizona Highway Department to cope with postwar planning and to create the nucleus of an organization to carry out a postwar highway building program has been announced by State Engineer Bernard Touhey.

In the reorganization, Touhey eliminated the state's five resident engineers and increased the number of district engineers from two to five, as follows: W. R. Hutchins (reappointed), James A. Parker, George Lang, Roy Holland and Ed Mays, all former resident engineers. R. C. Perkins, veteran district engineer in the department, was named assistant state engineer in charge of field work.

MEN AND JOBS

Capt. Melvin T. Edmonds, former engineer for the flood control and drainage program of Harris County, Tex., has been made a major with the Fifth Army in Italy. Major Edmonds is a former assistant district engineer for the Federal Works Administration at Houston. He has been overseas a year, serving as division engineer supply officer in North Africa.

Lt. Col. W. W. Zass, former chief engineer of the Arkansas Highway Department, is awaiting assignment, after 20 months in Central America with U. S. Army, as a district engineer on the Inter American Highway.

Maj. John D. Umberger, post engineer at Camp Davis, N. C., has been transferred to Fort Belvoir, Va., and has been succeeded at Camp Davis by **Maj. Frank J. Vassalotti,** returned from overseas duty.

Col. R. E. M. Des Islets, Army engineer in the Kansas City, Mo., area since 1942, has been ordered to Camp Breckenbridge, Ky., to take over combat troops. **Lt. Col. Sam G. Neff** will succeed him in the Kansas City district.

Hill Ferguson, Birmingham, Ala., has been named to direct the regional planning board of Jefferson County, Ala., with offices in the Court House at Birmingham.

Sampson P. Robins, assistant engineer, Canadian Pacific railroad, Montreal, has retired after 44 years' service.

Charles Omar Quade, former resident engineer in the construction of the Consolidated Vultee Aircraft plant at Fort Worth, Tex., has been promoted to captain with the U. S. Engineers of the Denison, Tex., District office.

Harry F. Irwin, engineer in the water and engineering divisions of Ogden, Utah, for 27 years, has gone to San Francisco, Calif., to become civilian engineer with the Pacific division of the United States Army Engineers.

Paul F. Hatch has been appointed acting district engineer of the Mid-Columbia district office of the Bonneville Power Administration to handle engineering and operating problems in customer service for the Bonneville-Grand Coulee power system in the southeastern Washington-Eastern Oregon area.

Lieut. Col. T. S. Davis, of Rome, Ga., is post engineer at Camp Mackall, N. C., directing a malaria control project.

K. W. Bash, civil engineering graduate of the University of Michigan, has been appointed general manager of Canada's Wartime Housing, Ltd., which provides housing for war industries. Mr. Bash has had wide experience in construction in eastern Canada, notably with the Foundation Co. of Canada, Ltd.

T. B. Gunter, Jr., of Raleigh, N. C., has been appointed chief bridge engineer of the North Carolina Highway and Public Works Commission to succeed the late W. L. Craven. Gunter has been with the highway department since he received his engineering degree from the University of North Carolina in 1923. He will have charge of the location, design, construction and maintenance of all highway bridges in the state.

Thomas E. Riley, Worth County engineer at Northwood, Ia., has resigned to become Wapello County engineer at Ottumwa.

Coleman H. Cook, associated with the Texas State Highway Department for 15 years, has been made chief designing engineer of the bridge division.

Frank K. Evans, Coldwater, Mich., former Branch County engineer, has been advanced to major and is now stationed with an Army Engineer's group in England. He enlisted in December, 1941, and was on the Casad Depot construction project near Fort Wayne, Ind. Thence he was transferred to the Sharonville depot project in Ohio, and later to Camp Belvoir, Va. He went overseas last December.

Frank F. Bell, former vice-president of the Uvalde Construction Co. of Dallas, Tex., has been made a colonel with the Army Engineers Corps. He was educated at the Massachusetts Institute of Technology.

Maj. N. White, Little Rock, Ark., has rejoined Dickinson & White, engineers, since having been placed on an inactive status in the Army. Major White, until September, 1942, was associated with the Little Rock office of United States Engineers. He was also area engineer of the Newport Army airfield project and the Eastman Hotel Annex, Hot Springs, Ark., an addition to the Army and Navy General Hospital.

Agustin Buenrostro, civil engineer, chief of the public works department of the Ministry of Communications and Public Works in Mexico. He succeeded Aaron Marino Hernandez, who resigned. Buenrostro was chief of the railroad construction and exploitation department.

Donald W. Hamilton, of Asheville, N. C., who received his civil engineering degree from North Carolina State College, in 1924, has been promoted to major from captain in the New Hebrides, where he is a special service officer. Major Hamilton is well known in North Carolina and New Jersey as a public utilities engineer, having been associated with the Stone and Webster Service Corp. and its subsidiaries for 17 years prior to entering the Army in May, 1942.

John C. Riedel, head of the Bureau of Engineering, New York City, who is 72 years old and beyond retirement age but anxious to continue his work, has been granted a 2-year continuance by the Board of Estimate. Mr. Riedel entered the city's service in 1901, while an instructor at Cooper Union, of which he is an alumnus, and at which he taught for nearly three decades.

Louis D. Ponzio, formerly purchasing engineer with the M. W. Kellogg Co. and the Lummis Co., is now manager of the estimating department of the Hydrocarbon Research, Inc., New York.

Delbert D. Smith, for 19 years with the City Water Department of Santa Barbara, Calif., has been appointed superintendent of the Montecit Water District. **Eugene B. Brown,** who has been the city engineer of Santa Barbara, replaces Mr. Smith as city water superintendent.

Construction work estimated to cost $5,000,000, to be undertaken soon on the northwest stage route, British Columbia, by the federal department of transport, will be carried out under the direction of **H. P. Keith,** district area engineer. He was formerly Alberta Province deputy minister of public works.

Roy J. Jacobs, assistant professor of civil engineering at the Duke University School of Engineering, has been commissioned a lieutenant, junior grade, in the United States Naval Reserve.

Columbia Basin irrigation project planned for postwar construction

Early postwar start being planned for Columbia Basin irrigation project in Washington—Work in addition to the present Grand Coulee dam and power plant estimated to cost $227,000,000.

Inauguration of work on the Columbia Basin irrigation project in the state of Washington, using water and power supplied by Grand Coulee dam on the Columbia River, stands high on the list of postwar projects of the U. S. Bureau of Reclamation. A total of 1,000,000 acres can be put under irrigation, ultimately, but present plans call for bringing this land into use at the rate of about 50,000 acres a year over a 20-year period.

Construction of a great balancing reservoir in the upper end of the Grand Coulee, the ancient valley of the Columbia River, is the first item on the program. If war conditions permit, that work will be started in 1945. The Grand Coulee, which is a wide gorge having wall ranging from 600 to 900 ft. high, will be dammed by two 100-ft. high earth dikes, one about two miles from the present dam across the Columbia and one near Coulee City, about 27 miles away. The canal system to serve the irrigated lands will start from that point.

Water for irrigation is to be pumped from the reservoir behind the present dam up into the reservoir in the coulee, from where it will flow, chiefly by gravity, to the irrigable lands lying to the south. Foundations for the pumping plant were installed as part of the contract for the Grand Coulee dam and power plant. Electricity from the power plant will be used for pumping.

Total cost $447,000,000

Three years ago, the entire Columbia Basin project, including Grand Coulee dam, reservoir, and power plant, which have now been built, was estimated to cost $394,000,000, but revision of the figure last year brought it up to **$447,000,000**. This includes $220,000,000 for dam and power plant already built, and $227,000,000 for irrigation facilities yet to be constructed.

A breakdown of the estimate for irrigation includes the following amounts: canals $123,000,000; laterals $57,500,000; drainage system $6,000,000; equalizing reservoirs $5,300,000; and pumping for irrigation $30,900,000, including new pumping facilities at the Grand Coulee dam $25,100,000, and two temporary pumping plants—one at Pasco and one at Burbank, for use till the main canals from the equalizing reservoirs are completed—and auxiliary pumping plants $5,800,000.

The entire project has been authorized by Congress and, according to Frank A. Banks, regional director, only relatively minor details remain to be added to the blueprints before starting development of irrigation features. Work, he says, could start just as soon as an adequate appropriation is available; and irrigation districts adopt a repayment contract. No funds can be spent south of the equalizing reservoir, where the canals will be located, until water users sign contracts, unless special funds are made available. However, work can start on the equalizing reservoir and pumping facilities without waiting for the repayment contracts.

The bureau estimates that of the 1,000,000 to 1,200,000 acres for which the undertaking will ultimately make water available, water can be brought to about 50,000 acres on 1,000 farms a year if the project is developed at a relatively slow rate over a 20-year period; and that at full development the project should support 200,000 to 250,000 people, thus increasing the population of eastern Washington 50 percent, and creating a comparable need for construction.

Under the proposed users contract, farmers would pay an average total of $85 per irrigable acre, payments beginning at the close of a ten-year development period, receivable in 40 annual installments, and adjustable relative to crop value. The balance of the cost of the project would be paid out of power revenue, or charged off against flood control or navigation.

About 140,000,000 man-hours of labor at the site—twice that used so far for construction of the Grand Coulee Dam project—will be required to construct irrigation facilities for complete development of the Columbia Basin.

Press Assn. photo

Fall of 100-ton counterweight crashes bridge

This gaping hole in the floor of a drawbridge over the Mobile River at Mobile, Ala., was made by a 100-ton concrete counterweight which broke loose from supporting cables at the top and crashed through the floor. The accident, which occurred on June 21, not only stopped highway traffic but also traffic on the river as the channel was blocked. The huge weight fell as the night watchman was raising the draw for a ship to pass.

Gulf Shipbuilding Corp., builders of freighters and warships, was isolated from the open gulf. Engineers at the time gave no indication when the channel could be cleared, although they estimated it would take about ten days to repair the damage on the bridge. Meantime, approximately 5,000 cars which ordinarily move over the bridge each morning have been rerouted through a toll tunnel. Heavy oil trucks had to make long detours.

OBITUARY

Harry Walford Silke, 76, retired civil engineer, died at Seaside, Ore., June 22. For 12 years he had been employed by the Great Northern R. R. In 1924 he worked for the federal government in building railroads in Alaska. During World War I he was in the Army Engineers.

Oswald Carl Grail, 56, superintendent of the light plant and waterworks at Huron, Ohio, died June 23 at his home there.

Charles V. Lavery, 42, construction engineer, director of the department of construction and maintenance of Colonial Williamsburg, died at the Virginia city June 26. Since 1941, he had been head of the department in charge of restoring the city to its eighteenth-century appearance.

For more than twenty years, Mr. Lavery was associated with Vermilya-Brown, Inc., in New York. He supervised the construction of Yale's Sterling Memorial Library, the Yale Graduate School and units of the Yale house plan at New Haven, Conn. He was also one of the supervisors of the construction of the Columbia Presbyterian Medical Center and the Federal Reserve Bank Building in New York, and assisted in the construction of the National Gallery of Art in Washington, for which he supervised the quarrying and fabrication of all exterior marble, as well as the interior construction of the building.

Otto E. Goldschmidt, Green Farms, Conn., a specialist consulting engineer with the War Production Board, died June 29. He was graduated from the University of Illinois in 1899. He practiced as a consulting engineer in New York until 1937, when he retired. In 1942 he came out of retirement to work for the WPB.

William R. Cruse, 49, assistant to the deputy commissioner-chief engineer of the Michigan State Highway Department, died in Lansing June 23. Mr. Cruse was graduated from the civil engineering department of the University of Michigan in 1919. Prior to taking the highway department position, he was city engineer in Jackson, Mich.

Marshall G. Crouch, 64, well known building contractor, died recently in Hickory, N. C.

Thomas F. Campbell, 68, a retired building contractor, who had built many buildings around Dade City, Fla., died there recently.

James L. Massengale, 63, veteran contractor of Houston, Tex., died June 21.

John H. Pennington, 68, well known builder and retired construction foreman of the Atlanta, Ga., city construction department, died recently.

James Knight Jones, 37, general building contractor of Columbus, Ga., died June 19. He was a graduate of Georgia Institute of Technology.

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Edward E. Wall, St. Louis engineer dies at 83

Edward E. Wall, former St. Louis director of public utilities, died in that city on June 26, at the age of 83.

Mr. Wall retired in 1941 after having served St. Louis for almost half a century in various capacities from assistant engineer to water commissioner, and finally director of all utilities. He was identified with practically all important developments in the St. Louis water system.

Graduated from the Missouri State University in 1884, his first work was as recorder and gauger with the Mississippi River Commission at Arkansas City, after which he spent several years on railroad surveys and private consulting practice. In 1892 he entered the employ of the St. Louis water department, advancing to water commissioner in 1911. Mr. Wall became director of utilities in 1925, resigning from this post one year later to establish a private practice. In 1933 he again was appointed director of public utilities, resigning nine years later at the age of 81.

Some years ago, in responding to congratulations from the editor of *Engineering News-Record,* on his many contributions to the advancement of waterworks practice, Mr. Wall wrote, "I am happy to say that I have little to regret as I look back on the years that are gone, and I feel that the good opinion of my fellow engineers is in itself a great reward for the things that I have aided in getting done."

Mr. Wall was a member of the American Society of Civil Engineers since 1905, serving as a director 1918-20, and as vice president 1921-22; in 1938 he was elected to honorary membership in the society. He was a member also of the American Water Works Association and the St. Louis Institute of Consulting Engineers.

Carolina Crook dies; A.S.C.E. board secretary

Carolina Crook, secretary to the board of direction of the American Society of Civil Engineers for the past 25 years, died at her home in New York on June 30 following an illness of several months. Miss Crook's long service with the board had made her one of the most widely known persons in the A.S.C.E. She came to the society 38 years ago at the age of 15 to act as a clerk in the society's library, from which position she advanced to the position of secretary of the board of direction during the time when the late Charles Warren Hunt was secretary of the society.

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Illinoisans object to a Missouri levee

The supervisors of Madison County, Ill., are preparing to protest to the War Department against the construction of a levee on the opposite side of the Mississippi River to protect Columbia Bottoms, site of the proposed second St. Louis municipal airport. They claim that such a levee would render useless all of the Missisippi levees in the county, narrowing the river and causing a rise, which, in time of flood, would endanger levees now safeguarding Granite City, Madison, Venice, Nameoki, Mitchell and East St. Louis.

WEEKLY CONSTRUCTION SUMMARY

CONTRACTS

Continental U. S. Only
(Thousands of Dollars)

	Week Ending July 8 1943	June 29 1944	July 1944
Federal	$36 141	$19,640	$13,8
State & Municipal	2.766	9.331	3,2
Total public	$38.907	$28.971	$17,1
Total private	3.095	5.506	1,8
TOTAL	$42,002	$34.477	$18,9
Cumulative 1944 (27 weeks)			$910,7
1943 (27 weeks)			$1,868,4

Note: Minimum size projects include are: Waterworks and waterways projects $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	1943 27 Weeks	Cumulative 1944 27 Weeks
NON-FEDERAL	$261,234	$261,0
Corp. Securities	15.321	85,3
State & Mun.	85,780	39,3
RFC Loans	9,000	36,1
FPHA Loans	3,133	
REA Loans	20,000	
Fed.-Aid Hwy.	128,000	
FEDERAL	$2,653,838	$245,9
TOTAL CAPITAL	$2,915,072	$446,2

ENR INDEX NUMBERS

Index base=100		1913	19
Construction Cost.	June '44	298.72	143
Building Cost.	June '44	235.33	127
Volume	May '44	100	44

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager *SCOTT McLEOD, Statistics* *J. A. MAHONEY, Reports*
(Daily service also available—Write for details)

WATER SUPPLY

PROPOSED WORK

Fla., Fort Walton—City, City Hall, bids soon water and sewer imprvs. $200,000. Smith & Gillespie, Realty Bldg., Jacksonville, engrs.

Mass., Sharon—Town, Supt. Water Dpt., plans completed test well, water sys, exten. $17,000. Weston & Sampson, 14 Beacon St., Boston, engrs. CD 4/17—ENR 4/27.

N. J., Highbridge—Boro, School Hall, well, 250 ft. deep. $15,000.

Tex., College Station—City, c/o Mayor Hall, making plans WW imprvs. $15,000. Application for FWA funds rejected. J. J. Rady, Insurance Bldg., Forth Worth, engr.

Tex., Galveston—City plans $1,500,000 bond election 30 in. water supply main between Alta Loma and Galveston.

BIDS ASKED

Bids Asked July 10

Ont., Sault Ste. Marie—Municipality, I. V. Heane, clk., 224 ft. aqueduct over Fort Creek and 60 ft. aqueduct on Conmee Ave. $15,000. E. E. Smith, City Hall, engr.

Bids Asked July 17

†**Okla., McAlester**—W. Jones, mayor, water facilities, Contr. 1, Okla., 34-194N. $100,000. **FWA.** Plans deposit $25. Collins Eng. Co., McAlester, engrs. CD 5/3—ENR 5/4.

†**Tex., Killeen**—City, c/o Mayor, City Hall, Contr. 2, concrete reservoir and pump house, Tex. 41-548-N. $25,000. **FWA.** Plans deposit $15. F. J. Von Zuben, 1608 Mistletoe Blvd., Fort Worth, engr.

LOW BIDDERS

†**Fla., Apalachicola**—City, c/o C. I. Lanier, mayor, June 21, water and sewer imprvs., Fla. 8-280-N, from J. B. Green Plumbing & Heating Co., Sarasota, **$55,282. FWA.** Smith & Gillespie, Realty Bldg., Jacksonville, engrs. CD 4/10—ENR 4/13.

La., New Orleans—Sewerage & Water Bd., June 26, 13,400 lin. ft. 6 in. c.i. watermains, from Pittman Bros. Constr. Co., 2800 N. Galvez St., **$26,556.** CD 6/15.

†**Pa., Pittsburgh**—Veterans Admin., Vernent Ave., between H and I Sts. N.W., Wash., 25, D. C., June 27, water treatment plant, from Navarro Corp., 6219 Broad St., **$30,500.** CD 6/2—ENR 6/8.

CONTRACTS AWARDED

Pa., Steelton—Bethlehem Steel Co., E. 3 St., Bethlehem, water sys. intake, to Gannett, Fleming, Cordry & Carpenter, 600 North Second St., Harrisburg, **$25,000.** Awarded to S. C. Lehr, E. Third St., Bethlehem, engr.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ala., Mountain Brook—City, sanitary and storm sewers (collection sys. only). J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

†**Me., Bath**—City, H. O. Trowbridge, chn. com., 13 Andrews Rd., bids soon refuse incinerator. Over $25,000. **FWA.** W. E. Flynn, 5 Allens Ave., engr. CD 4/24—ENR 4/27.

Mich., Fremont—Completing plans enlarging sewage plant. Francis Eng. Co., Eddy Bldg., Saginaw, engr.

Mich., Newberry—Completing preliminary plans sewage treatment plant, incl. primary sedimentation and separate sludge digestion, with summer chlorination. $78,000. Francis Eng. Co., Eddy Bldg., Saginaw, engrs.

Tex., San Antonio—City, G. Mauermann, mayor, City Hall, incinerator, $275,000. Filing application for FWA funds. Howard E. Burns, 4139 Normandy St., Dallas, engr. T. Coghill, City Hall, city engr. CD 6/29.

LOW BIDDERS

†**N. Y., Pawling**—U. S. Eng., 120 Wall St., New York, Zone 5, June 29, sewage disposal sys., from E. Totonelly Sons, 178 S. Robinson Ave., Newburgh, **$48,245.**

La., New Orleans—Sewerage & Water Bd., June 26, furnishing, laying approx. 3,020 ft. 27 and 30 in. rein-con., 30 lin. ft. 12 in. c.i. and 11,000 ft. 8 in. concrete sewers, 14,000 lin. ft. 6 in. concrete sewer house connections, Contr. 152-S, from Pittman Bros. Constr. Co., 2800 N. Galvez St., **$97,421.** CD 6/15.

CONTRACTS AWARDED

†**N. J., Metuchen**—U. S. Eng., 120 Wall St., New York 5, N. Y., sewerage disposal sys., to Interboro Heating Co., 109 E. 29 St., New York, N. Y., **$19,220.** Alexander Potter Associates, 50 Church St., New York, N. Y., engrs. Bids 6/16.

Location of ENR Correspondents

Symbols and Abbreviations Include:

†	Federal Government
‡	Project of $500,000 or over
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily
A-E-M	Architect-Engineer-Management type of contract

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Latin America
Bridges	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads); BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage

Dates shown are of issue in which last previous report was published.

BRIDGES

PROPOSED WORK

Conn., New London—New York, New Haven & Hartford R. R., E. E. Oviatt, ch. engr., New Haven, completed plans 280 ft. vertical lift bridge for double track railroad. Waddell & Hardesty, 101 Park Ave., New York, 17, N. Y., engrs. CD 9/16—ENR 9/23.

†**District of Columbia**—Pub. Rds. Admin., 18 and F Sts. N.W., Wash., 25, bids soon 2 steel struts between puns of existing bridge, Boundary Channel, Columbia Island. $30,000. CD 6/14—ENR 6/22.

Utah, Price—The Denver & Rio Grande Western R. R. Co., A. E. Perlman, ch. engr., Rio Grande Bldg., Denver, Colo., raising bridge and making line change. $117,947.

BIDS ASKED

Bids Asked July 10

Ont., Owen Sound—J. A. Fletcher, engr., Court House, 2 span 8 ft. x 20 ft. and 2 span 4 ft. x 15 ft. bridges in Glenelg Twp., for Grey Co. About $36,000.

Bids Asked July 11

Indiana—State Hy. Comn., S. C. Hadden, chn., Indianapolis, scraping, cleaning, painting 6 bridges, length 1,173 lin. ft., Greenfield Hy. Dist., Contr. M-2487, Wayne, Morgan and Howard Counties; 7 bridges, 2,252 lin. ft., Crawfordsville Hy. Dist., Contr. M-2486, Fountain, Warren, Parks, Tippecanoe, Clay, Clinton and Vermillion Counties; 4 bridges, 871 lin. ft., La Porte Hy. Dist., Contr. M-2493, Porter and Lake Counties; 3 bridges, 1,019 lin. ft., Seymour Hy. Dis., Contr. M-2491, Owen, Barthelomew and Jackson Counties; 8 bridges, 1,888 lin. ft., Vincennes Hy. Dist., Contr. M-2490, Gibson, Posey, Crawford, Perry, Spencer, Davies and Pike Counties; 3 bridges, 1,932 lin. ft., Vincennes Hy. Dist., Contr. M-2489, Owen, Lawrence, Martin and Dubois Counties; 3 bridges, 1,340 lin. ft., Greenfield Hy. Dist., Contr. M-2488, Franklin and Union Counties. Plans deposit $1 each project. CD 5/31—ENR 6/8.

Bids Asked July 13

Mo., Columbia—The Curators of University of Missouri, Jesse Hall, Columbia, underpass on Ninth St. Plans deposit $25. Jamieson & Spearl, 1636 Arcade Bldg., 806 Olive St., St. Louis, Zone 1, archts.

Bids Asked July 17

N. J., Perth Amboy—At office Purchasing Agent Port of New York Auth., 111 Eighth Ave., New York, 11, N. Y., painting structural steel members of New Jersey Approach to Outherbridge Crossing. Contr. O & M-7; F. C. Ferguson, chn.; adv. ENR 7/6.

Bids Asked About July 25

O., Canton—City, steel, concrete bridge over Nimishillen Creek on 19 St. N.E. $44,789. J. Shisler, City Hall, engr.

CONTRACTS AWARDED

Arkansas—J. H. Crane, chn. State Hy. Dpt., Little Rock, reinforcing 2 rein.-con. bridges on Paron-North Rd., State Hy. 9, Saline Co., to McGeorge Contg. Co., Pine Bluff, **$24,531.** Bids 6/15. CD 6/2.

Que., Senneville—Minister P. Wks., Quebec City, rein.-con. bridge over Bouriamaque River, between Lots 35 and 36, Range 4, on Barraute Val d'Or Hy., for Dpt. P. Wks., Quebec, to Societe d'Entreprises Generales, Ltd., Amos, **$32,000.** Bids 6/12. CD 6/7.

STREETS AND ROADS

PROPOSED WORK

Puerto Rico, Aguadilla — Municipality, plans constructing 2 kms. Caimital Rd., 2 kms. Camino Montana 1 Rd., 2 kms. San Antonio Rd. and 2 kms. Caimital Bajo Rd. $130,000.

BIDS ASKED

Bids Asked July 10

New Jersey—S. Miller, Jr., comr. State Hy. Dpt., Trenton, constructing 0.96 mi. access road and bridge to Caven Point-Clermont Terminal, U. S. Army Depot, from Chapel Ave. to Caven Point, Jersey City, Hudson Co.

New York—Comr. Parks at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, altering access roads at 188 St. Hollis Court and Springfield Blvds., etc., Grand Central Parkway, Queens Boro, Contr. Q-84-143.

Connecticut—State Hy. Comn., W. J. Cox, comr., Hartford, 3,115 sq.ft. concrete sidewalk, and 72 ft. metal bridge railing, Farm River Bridge, East Haven, Plans deposit $1.36; 4,733 sq.ft. concrete sidewalks, 1,064 ft. concrete curbing, Newington, Plans deposit 34c; 6,900 ft. Plymouth, Plans deposit $1.70; 20,628 ft. concrete sidewalks, 3,473 ft. concrete curbing, Thompson, Plans deposit $3.40; rolled bank run gravel surfacing 3,231 ft. Steel's Crossing Rd., Bolton, Plans deposit $1.70.

Bids Asked July 11

Iowa—State Hy. Comn., Ames, maintenance resurfacing 5.4 mi. Iowa 216 from Exline to Iowa 60, 4 mi. Iowa 277 from Numa to Iowa 60, M-5262, Appanoose Co.; 12.3 mi. Iowa 273 from Lake Wapello to U. S. 63, M-5263, Davis Co.; 8.3 mi. Iowa 14 from Marion Co. to Iowa 253 and Iowa 253 from Williamson to Iowa 14, M-5264, Lucas Co.; 9.8 mi. Iowa 140 from Sloan to Iowa 141, 3.9 mi. Iowa 165 from State Park to Onawa, 22.6 mi. Iowa 35 from Turin to Ida Co., 9.1 mi. Iowa 37 from Iowa 35 to end of oil, M-3320, Monona and Woodbury Counties; 13.5 mi. Iowa 137 from Albia to Eddyville, M-5265, Monroe Co.; 8.5 mi. Iowa 10 from Sioux Co. to Paullina, 10.7 mi. Iowa 143 from Marcus to Iowa 10, 4 mi. U. S. 59 from Cherokee Co. to Iowa 10, M-3330, O'Brien

STREETS, etc. (Bids Asked, Cont'd.)

and Cherokee Counties; 6 tree stream retards along east bank of Cedar River south of Rochester in Sect. 11, Iowa-Rochester Twp., FN-467, Cedar Co.; maintenance culvert repair and flumes on U. S. 20 east of Moville, on Iowa 31 near U. S. 20, on Iowa 141, north of Smithland, M-3307, Woodbury Co. Plans deposit 20c a set, for plans not returned. F. R. White, ch. mgr.

Minn., Le Center—Le Sueur Co. C. L. Huebl, aud., loading and screening 47,100 cu. yd., hauling 488,670 cu. yd. gravel surfacing (maintenance jobs), various state aid and county aid roads. Over $25,000.

★**Ohio**—State Hy. Dpt., Columbus, asphaltic concrete resurfacing 0.999 mi. Sects. A and Crestline of SH 204, Crawford Co., $27,100; 3.665 mi. Sects. Cleveland, Parma, Independence, Brooklyn Heights of SH 480, Cuyahoga Co., $55,700; 3.385 mi. Sects. A, Broadview Heights of SH 499, Cuyahoga and Summit Counties, $65,100; 6.812 mi. Sects. Greenville, A-1, A-2 E and D of SH 215, Darke Co., $75,400; 1.405 mi. Sect. Cincinnati of SH 38, US 50, Hamilton Co., $33,140; 2.113 mi. Sects. Madison and F of SH 327, $45,400; 0.981 mi. Sect. Willoughby of SH 604, $23,070, both Lake Co.; 2.192 mi. Sects. C, Chillicothe and X of SH 5, US 23 and SH 8, US 50, Ross Co., $30,500; 2.345 mi. Sects. Massillon of SH 68, 69 and 71 US 30 and 21 Starke Co., $63,930; 6.218 mi. Sects. B, C and S of SH 325 and 329, US 422, Trumbull Co., $88,900; 1.317 mi. Sect. Bellaire of SH 7, Belmont Co., $22,700; widening, asphaltic concrete resurfacing 1.118 mi. Sect. Bedford and A of SH 12 and 16, Cuyahoga Co., $48,600; bituminous surface treatment 10.971 mi. Sects. W, T, E, A-2, V, and U of SH 29, Ross Co., $32,860; 39.08 mi. Ashtabula, Mahoning and Trumbull Counties, $58,852; 12.33 mi. Lawrence and Scioto Counties, $38,824; 22.93 mi. Portage, Starke and Summit Counties, $60,448; grading, drainage structures, concrete paving 0.524 mi. Sects. C and A of SH 60, Montgomery and Greene Counties; grading, drainage structures, constructing sidewalks 0.554 mi. Sects. Gallipolis and C of SH 405, Gallia Co., $9,340.

Bids Asked July 14

Mich., Plymouth—City. C. H. Elliot, mgr., City Hall, curbing, guttering, concrete paving, etc. 4 blocks, streets. S. L. Besse, City Hall, city engr.

Minnesota—State Hy. Dpt., St. Paul, stabilized gravel base and mixed prime course 7.1 mi. between North Junction Trunk Hy. 169 and junction T. H. 56 at Isle, S. P. 4804-03 (Trunk Hy. 27-71); Plans deposit $2.15; bituminous seal coat 10.9 mi. between Pelland and International Falls, S. P. 3604-18 (T. H. 11-11) and S. P. 3605-03 (T. H. 11-11). Plans deposit 35c.

Bids Asked

Connecticut—State Hy. Comn., Hartford, rejected bids June 19, traffic bound gravel surfacing 5,260 ft. Windham Rd., Brooklyn, rolled bank run graveling 4,063 ft. Old Willimantic Rd., Columbia. CD 6/13—ENR 6/15.

†**Mass., South Boston**—U. S. Eng., 31 St. James Ave., Boston, (selected bidders) concrete paving and track construction, No. 19-023-44-Neg 237. $40,000.

Ont., Hamilton—A. C. Hildreth, engr., County Bldg., Hamilton, 1¼ mi. stabilized road, for Barton Twp., County Bldg.

LOW BIDDERS

Iowa—State Hy. Comn., Ames, June 23, maintenance bituminous resurfacing State MS-5 Div. 8 on streets and roads in eastern part of state, involving 212,372 gal. bituminous materials and 12,494 tons cover aggregate, from Hargrave Const. Co., 2424 Bever St. S.E., Cedar Rapids, **$76,289.** F. R. White, Ames, ch. engr.

†**N. J., Jersey City**—U. S. Eng., 120 Wall St., New York 5, N. Y., June 28, paving at Caven Point, from Franklin Contr. Co., 20 Washington Pl., Newark, **$33,000.**

†**N. J., Morristown**—U. S. Eng., 120 Wall St., New York, Zone 5, N. Y., June 26, pavement reconstruction, Proposal A, from Tufano & Vachris, 168-22 91 Ave., Jamaica, 3, N. Y., **$479,604**; Proposals B and C, from Del Balso Constr. Corp., 220 E. 42 St., New York, 17, N. Y., **$421,727** and **$444,571** respectively. CD 6/23.

★**Ohio**—State Hy. Dpt., Columbus, June 27, from Ohio Road Imprvt. Co., Chamber of Commerce Bldg., Columbus, imprv. 15.26 mi. Seneca Co., **$31,822**, est. $33,040; 3.928 mi. Stark Co., **$73,916**, est. $75,100; 2.618 mi. Columbiana Co., **$29,045**, est. $30,-150***from Fenton Constr. Co., Box 445, Ashland, 5.041 mi. Adams Co., **$76,647**, est. $84,500; 4.937 mi. Brown Co., **$71,728*****from Clinton Constr. Co., Wilmington, imprv. 4.417 mi. Clinton Co., **$38,845**, est. $38,900*** from Newark Asphalt Products Co., W. Poplar Ave., Newark, 2.719 mi. Licking Co., **$29,988**, est. $34,560***from Standard Slag Co., 1200 City Bank Bldg., Youngstown, 3.198 mi. Mahoning Co., **$38,800**, est. $39,800; from Hull Resurfacing Co., Butler, Pa., 34.66 mi. Hocking, Morgan and Washington Counties, **$39,763**, est. $40,992***from Lester Baker Co., St. Joe, Ind., 32.23 mi. Ottawa and Sandusky Counties, **$55,102**, est. $56,-370. CD 6/20—ENR 6/22.

★**Tennessee**—State Hy. Dpt., Nashville, June 23, imprv. 5.852 mi. Knox Co., from Chandler Brothers, Virgilina, Va., **$455,660**; 5.736 mi. Knox Co., from Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Pa., **$419,271.** CD 6/7—ENR 6/15.

Wisconsin — State Hy. Comn., Madison, June 27, imprv. 1 mi., Milwaukee Co., from Kramp Constr. Co., 2775 S. 27 St., Milwaukee, **$228,810.** CD 6/16—ENR 6/22.

CONTRACTS AWARDED

Alabama—State Hy. Dpt., G. R. Swift, dir., Montgomery, sprigging and sod ditch checks, outlets, etc., flumes, Proj. S 510, Barbour and Henry Counties, to Vandigriff Constr. Co., 4708 N. Court St., Montgomery, **$24,712.** Bids 6/9. CD 6/1.

Ill., Oak Park—H. N. Leadaman, city clk., resurfacing streets, to Municipal Paving Co., 5757 Ogden Ave., Cicero, **$41,236**; curbing, guttering streets, to Albion Carlson & Co., 5942 W. Chicago Ave., Chicago, **$48,104.** CD 6/13.

Kansas—State Hy. Dpt., Columbus, imprv. 8.492 mi. Cherokee Co., to Kaw Paving Co., Crane and Topeka Sts., Topeka, **$69,876.** Bid 6/9, awarded 6/23. CD 5/26—ENR 6/1.

Kansas—State Hy. Dpt., Topeka, grading, bituminous surfacing 1.603 mi. Proj. DA-WR 35, Seward Co., to Stannard Constr. Co., 428 N. Rock Island St., Wichita, **$33,235.** Bids 5/29, awarded 6/23. R. C. Keeling, Topeka, state hy. engr.

†**Me., Peak Island (sta. Portland)**—U. S. Eng., 31 St. James Ave., Boston, Mass., road and drainage imprvs., No. 19-023-44-NSG 218, to W. H. Hinman, Inc., North Anson. **$65,670.** Bids 6/23.

Minnesota—State Hy. Dpt., St. Paul, load, haul about 2,183 cu. yd., and crush, screen, load and haul about 16,468 cu. yd. mineral aggregate for bituminous surfacing for Maintenance Div., to A. Vagts, Breckenridge, **$33,863**; Bids 6/13; crush, screen and load about 12,265 cu. yd. mineral aggregate for bituminous surfacing for Maint. Div. (Windom Dist.), to Price & Waggoner, Slayton, **$26,402.** Bids 6/19.

Minnesota—State Hy. Dpt., St. Paul, imprv. 17.4 mi. S.P. 4302-19 (T.H. 7-119), to Hector Constr. Co., Hector, **$95,566***** 22.3 mi. S.P. 5705-06 (T.H. 59-174) and S.P. 6303-21 (T.H. 59-174), to J. W. Craig Co., 1814 NE California St., Minneapolis, **$86,899*****11.3 mi. S.P. 6920-14 (T.H. 53-11), S.P. 6921-03 (T.H. 53-11) and S.P. 6922-19 (T.H. 53-11) to Zontelli-Herbison, Inc., Ironton, **$164,789.** Grand total $347,254. Bids 6/16. Rejected bids imprv. 24.5 mi. S.P. 0110-10 (T.H. 65-5) and S.P. 0121-14 (T.H. 65-5). CD 6/1—ENR 6/8.

Minnesota—State Hy. Dpt., St. Paul, imprv. 20 mi. S.P. 1205-15 and S.P. 3405-16, to Duininck Bros. & Gilchrist, Olivia, **$112,-176*****3 mi. S.P. 3112-07, to Ashworth-Hawkinson Co., St. Louis Park, **$25,981****8.9 mi. S.P. 4104-03, to S. J. Groves & Sons Co., 509 Wesley Temple Bldg., Minneapolis, **$52,-144*****8.7 mi. S.P. 7908-08, to J. H. Canley Co., 2336 Hampden Ave., St. Paul, **$43,558.** Grand total **$233,859.** Bids 6/23. CD 6/6—ENR 6/8.

Minn., Austin—Mower Co., Austin, graveling roads, to Osmundson Bros., Adams, **$28,038.** Bids 6/6.

Minn., Fairbault—C. L. McCarthy, aud. Rice Co., graveling roads, to Haferman & Stark, Jordan, **$29,307.** Bids 6/8.

Minn., Winona — R. Schoonover, aud. Winona Co., Winona, imprv. 15,000 cu. yd. roads, to F. Fakler, Winona, **$30,725.** Bids 6/6. CD 6/1.

†**Wash., Seattle**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., asphalt paving at Naval Station, Spec. 14256, NOY 9772, to Wash. Asphalt Co., 309 W. 39 St., **$65,618.** Bids 6/13. CD 6/6.

EARTHWORK, WATERWAYS

PROPOSED WORK

†**Okla., Mannford**—U. S. Eng., 416 Wright Bldg., Tulsa, Zone 2, making plans flood control reservoir across Cimarron River at point near here. $3,000.

BIDS ASKED

Bids Asked July 17

†**La., Harvey**—U. S. Eng., foot of Prytania St., New Orleans, Harvey Lock Entrance imprvs., incl. constructing approx. 245 lin. ft. creosoted timber guide wall exten., spur earthen levee, excav. approx. 5,400 cu. yd. earth, paving bank with rip-rap, removing, disposing certain timber pipe dolphins and portions Old Harvey Lock, installing certain mooring facilities, etc., Sol. No. 16-047-44-135.

Bids Asked

†**Mass., Boston**—U. S. Eng., 31 St. James Ave., Boston, (selected list bidders), grading, etc. No. 19-023-44-NEG 234, $18,000.

N. S., Annapolis Royal—Maritime Marshlands Rehabilitation Com., W. W. Baird, chn., Nappan, repairing 2 sections of dike, totaling 1,800 ft., and constructing 1 aboteaux on Lower Belle Isle Marsh, also 4 small breaks, 100 ft. About $250,000.

LOW BIDDERS

N. Y., Brooklyn—Dpt. Marine & Aviation, Pier A, North River, New York, Zone 4, June 25, repairs, renewals to existing steel sheet pile bulkhead, Columbia St., from Spearin, Preston & Burrows, 50 Church St., New York, Zone 7, **$21,262.**

CONTRACTS AWARDED

Ia., Clinton—Clinton Co., Clinton, repairing 12 mi. drainage ditch, to J. F. Strother, Eldon, **$21,969.** CD 5/24—ENR 5/25.

†**La., New Orleans**—U. S. Eng., foot Prytania St., 65,000 cu. yd. levee work, Inv. 16-047-44-110, to E. A. Caldwell, P. O. Box 1327, **$22,360**; 2,710 lin. ft. wooden revetment, Inv. 16-047-44-109, to W. R. Aldrich & Co., Kalwrah University Gardens, Baton Rouge, **$17,143.** CD 6/13—ENR 6/15.

†**Tex., Matagorda**—U. S. Eng., 25 St. and Avenue F, Galveston, dredging 4.6 mi. intracoastal Waterway on Colorado River, approx. 1,125,000 cu. yd. materials, W-42-243-Eng-44-457, to Atlantic Gulf & Pacific Dredging Co., New York, N. Y., and Citizens State Bank Bldg., Houston, 7.79c. per cu. yd. CD 6/5—ENR 6/8, under LB.

Ont., Sudbury—International Nickel Co. of Canada, Ltd., Sudbury, removing 2,000,000 tons rock from open pit mines in Froad and Stable Dists., to Don Constr., Ltd., 1189 Millwood Rd., Toronto. Est. about **$3,000,-000-$3,500,000.**

Sask., Humboldt—Prairie Farm Rehabilitation Bd., Geo. Spence dir., 910 McCallum Hill Bldg., Regina, earth fill dam and sheet steel cutoff on Wolverine Creek, Sects. 3, 8 and 11, Twp. 37, R. 22 W, near here, to Bird Constr. Co., Ltd., 24 Dominion Bank Bldg. **Moose Jaw, about $54,000.** CD 5/16—ENR 5/18.

LATIN AMERICA

Mexico—Mexican Government, Scrita. de Salubridad y A.P., plans drainage and tap water expansion. $1,150,000.

Mexico—National Rys. of Mexico, L. Reina, ch. engr. M.W., 19 Bolivar St., Mexico City, D.F., plans completing 175 mi. gap of 310 mi. route railroad between Mexico City and Tampico. $1,500,000. Engineer, c/o Dpt. P. Wks. & Transportation, Mexico City.

Mexico, Guadalajara—Municipal Government, Palacio Municipal, plans expanding WW. $800,000.

Mexico, Mazatlan—Municipal Government, Palacio Municipal, Jesus I. Escobar, mayor, Mazatlan, plans public market. $210,000.

PUBLIC BUILDINGS

PROPOSED WORK

†**Conn., Groton**—Pub. Housing Auth., NHA. 24, School St., Boston, plans by Payne & Keefe, 231 State St., New London, cafeteria bldg. addn., Conn. 6141.

†**Conn., Groton**—Pub. Housing Auth., NHA. 24 School St., Boston, Mass, making plans grading, drainage and site imprvs., Housing, Conn. 6018. A. B. Sleath, 231 State St., New London, engr. and archt.

★†**Mass., Springfield**—Monsanto Chemical Co., 1700 S. 2 St., St. Louis, Mo., plant. $500,000. Defense Plant Corp. will finance. CD 6/21—ENR 6/29.

†**Mich., Wayne**—Bendix Aviation Corp., South Bend, Ind., addnl. plant. $175,000. Defense Plant Corp. will finance.

†**Mich., Wayne**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., Jackson School, Mich. 20-336. **FWA.**

†**Neb., Omaha**—Bishop Clarkson Hospital, 26 and Dewey Sts., plans by John Latenser & Sons, 1307 Farnam St., nurses' home. $200,000. **FWA.** CD 11/16—ENR 11/18.

†**N. J., Metuchen**—U. S. Eng., 120 Wall St., New York, 5, N. Y., quartermaster warehouse at Raritan Arsenal. $40,000.

★†**N. Y., Deer Park**—U. S. Eng., 20 Wall St., New York, Zone 5, bids soon altering, repairing bldg. 127. $766,700.

†**Okla., Midwest City**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 1 story, part bsmnt. school and recreational bldg., Okla. 34-173-A. **FWA.**

†**Pa., Phila.**—Mercy Hospital, 47 St. and Woodland Ave., nurses' home addn. $48,600. **FWA.**

†**S. C., Columbia**—University of South Carolina, F. W. Wellborne, secy. Bd. Trustees, Columbia, plans by J. C. Johnson, Ritz Theatre Bldg., infirmary, SC 38-232. $200,000. **FWA.**

Tex., Orange—Bd. Educ., Orange, school bldg., etc. $210,000. Applied for FWA funds. Hedrick & Lindsley, 818 S. Standard Bldg., Houston, archts.

Puerto Rico, Cayey—Municipality plans 2 story rein.-con. hospital. $100,000.

PUBLIC BLDGS. (Proposed Work, Cont'd.)

†**Puerto Rico, Mayaguez**—Puerto Rico Experiment Station, U. S. Dpt. Agriculture, Mayaguez, plans experiment station. $127,461.

BIDS ASKED

Bids Asked July 12

†**Ark., Pine Bluff**—F. Moore, school superv. Jefferson Co., Pine Bluff, school bldg., Ark. 3-189-N. $165,000. **FWA.** Plans deposit $25. M. Selligman, National Bldg., archt. CD 5/22—ENR 5/25.

Bids Asked July 14

Ark., Benton—State Hospital Bd. Trustees, Markham and Elm Sts., Little Rock, hospital colony addn. $200,000. Plans deposit $50. Extended date. Bruggeman, Swaim & Allen, Gazette Bldg., Little Rock, archts. CD 5/31.

Bids Asked About July 17

†**Mich., Garden City**—P. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 1 story, 78x127 ft., brick, concrete recreation bldg. $75,000. **FWA.**

Bids Asked July 18

†**Calif., Vallejo**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 7 classroom addn. to Flosden School, Calif. 4-454-2A. **FWA.** H. J. Devine, Cronan Bldg., Sacramento, Zone 14, archt. CD 6/22—ENR 6/29.

Bids Asked About July 21

†**O., Akron**—St. Thomas Hospital, 444 N. Main St., nurses' home, Ohio 33-267-N. $137,900. **FWA.** CD 6/7—ENR 6/15.

Bids Asked July 21

†**Ore., Vanport City (br. Portland)**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 21 classroom bldg. for School 6, Ore. 35-174-1 and 6 classroom addn. School 4, Ore. 35-174-2, both 1 story, masonry exteriors, etc., $463,000. **FWA.** Extended date. Wolff & Phillips, 509 Pearson 4th Ave. Bldg., Portland, Zone 4, archts. C. E. Stewart, Vanport City, engr. CD 6/22—ENR 6/29.

Bids Asked July 26

Ga., La Grange—City Bd. Educ., City Hall, 3 story high school. Wm. J. Chase, 150 Peachtree St. N.E., Atlanta, archt. CD 2/10—ENR 2/17.

Bids Asked

†**Mass., Boston**—U. S. Eng., 31 St. James Ave., Boston, (selected list bidders), dispensary, No. 19-023-44-NEG 228, U. S. Army Base. $100,000.

†**Mass., Sandwich**—U. S. Eng., 31 St. James Ave., Boston, (selected list bidders), bldg. and tower, No. 19-023-44-NEG 229. $5,000.

†**Me., Houlton**—U. S. Eng., 31 St. James Ave., Boston, Mass., (selected list bidders), bldgs., fences, No. 19-023-44-NEG 230. $90,000.

†**Pa., Titusville**—Struthers Wells Corp., Titusville, superstructure and electrical work, conversion plant bldg. alterations and addns., three 60x20 ft. bays and one 60x26 ft. bay. P. F. Loftus, Oliver Bldg., Pittsburgh, engr. and archt. General contract substructure, from H. Platt Co., 933 Raspberry St., Erie, approx. $80,000. Federally financed.

LOW BIDDERS

†**Calif., Pittsburg**—Pub. Housing Auth., NHA, 785 Market St., San Francisco, June 14, 150 portable dwelling units, Calif. 4849, from Northwest Fabricators, P. O. Box 487, Albany, Ore., $174,750. CD 4/19—ENR 4/27.

†**Calif., Port Chicago**—Pub. Housing Auth., NHA, 785 Market St., San Francisco, June 14, 200 portable dwelling units, Calif. 4848, from Northwest Fabricators, P. O. Box 487, Albany, Ore., $232,300. CD 4/19—ENR 4/27, under Pittsburg.

†**Md., Bainbridge (sta. Port Deposit)**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., June 24, office bldg. at Naval Training Station, NOY $683, from Tompkins Co., 907 16 St. N.W., Wash., D. C., $320,250. CD 6/14.

★†**Mich., Royal Oak**—Pub. Housing Auth., NHA, 2073 E. 9 St., Cleveland, O., June 15, 475 unit temporary dwellings, Mich. 20226, from W. E. Wood Co., 4649 Humboldt Ave., Detroit, $1,197,000. CD 6/7—ENR 6/1.

★†**Pa., Coatesville**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C., June 27, infirmary bldgs., etc., from Jos. Weinstein, Inc., 66 Court St., Brooklyn 2, N. Y., $903,333. CD 5/18—ENR 5/25.

†**Tex., Dallas and Grand Prairie**—Pub. Housing Auth., NHA, 1205 Electric Bldg., Seventh and Taylor Sts., Fort Worth, June 26, road imprvs., walks, drainage, housing Tex. 41605, 41609, 41611, 41616 and 41617, from Glade Constr. Co., Century Bldg., Fort Worth, $157,887. CD 5/15.

CONTRACTS AWARDED

★†**Ala., Tuskegee**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C., addnl. bldgs., utilities, etc., to Penker Associates, Inc., 1030 Sumner St., Cincinnati, O., $801,900. Bids 6/20. CD 6/21—ENR 6/29, under LB.

†**Neb., Omaha**—St. Catherine's Hospital, 811 Forest St., nurses' home, Neb. 25-152-N, to A. Borshman Sons, 4601 Douglas St., $159,330. **FWA.** Bids 6/22. CD 6/14—ENR 5/4.

†**N. C., Wilmington**—Pub. Housing Auth., NHA, Georgia Savings Bank Bldg., Peachtree and Broad Sts., Atlanta, Ga., bituminous paving in Vance and Hewes Sect. of Mafitt Village, for housing N.C. 31-207 and 31-029, to F. D. Cline, Fairview Rd., Raleigh, $49,000. Bids 6/23.

★†**Pa., Punxsutawney**—Speer Carbon Co., A. S. Bemis, supt., St. Marys, general contract two 120x230 ft., structural steel frame mfg. plant addns., to Wigton Abbott Corp., 1225 South Ave., Plainfield, N. J. Est. $900,000. Defense Plant Corp. will finance. CD 6/23—ENR 6/29.

COMMERCIAL BUILDINGS

PROPOSED WORK

Ark., Hot Springs—Malco Theatre Co., Inc., 817-23 Central Ave., plans by Bruggeman, Swaim & Allen, Gazette Bldg., Little Rock, and bids soon theatre bldg. $250,000. CD 6/13—ENR 6/15.

Ga., Atlanta—Grady's Hospital, F. Wilson, supt., 36 Butler St. S.E., plans by Robert & Co., Bona Allen Bldg., student nurses' home, Piedmont Ave. $400,000. Applying for FWA funds.

N. D., Grand Forks—Dacotah Hotel, K. Bacon, mgr., Grand Forks, hotel bldg. $250,000.

Pa., Pittsburgh — Pittsburgh Hospital Assn., J. H. Keenan, pres. Bd., 5911 Center Ave., plans completed by P. C. Dowler, 803 Century Bldg., 4 story, bsmnt., 23 x 85 ft., brick, tile nurses training school and home. $450,000. Applying to FWA.

Tex., Houston—Hub Development Co., Box 862, 32 dwellings, in Denver Addn. $150,000.

N. S., Antigonish—Governors of St. Francis Xaxier University, Antigonish, exten. residential facilities, addnl. classrooms, library. $175,000.

★**N. S., Gorsebrook**—Bd. St. Mary's College, c/o Archbishop J. T. McNally, Halifax, college bldg. $1,000,000.

★**Ont., Toronto**—Hospital for Sick Children, 67 College St., 600 bed hospital, University Ave. $6,000,000.

★**Ont., Toronto**—Mount Sinai Hospital, 100 Yorkville Ave., hospital. $2,000,000.

★**Que., Three Rivers**—La Co-Operative D'Habitation, St. Louis Blvd., 200 dwellings. $600,000.

CONTRACTS AWARDED

Ill., Chicago—Fred J. Walsh Co., 134 S. La Salle St., masonry contract 92 units, brick row houses and duplex residences, 6321 to 6443 S. Lawler St., 6339 to 6423 S. Le Claire St., 5035 to 41 W. 63 Pl., 6336 to 64th St., 5023 to 5184 W. 64 Pl., to Berg Constr. Co., 3000 W. Burr Oak St., Blue Island. Total est. $438,600. H. Stahl, 111 W. Monroe St., archt.

R. I. Barrington—Barrington Harbours Corp., L. A. Matthews, Barrington, frame houses, 3,000 ft. new roads. Owner builds. Over $150,000. CD 3/30—ENR 4/6.

INDUSTRIAL BUILDINGS

PROPOSED WORK

N. J., Frenchtown—WAREHOUSE—Delaware Valley Farmers Co-operative Assn., Trenton Ave., 1 story, 60x125 ft. warehouse. $50,000.

N. J., Perth Amboy — PLANT — Wellin Davit & Boat Corp., 500 Market St., plans by M. Riesz, 871 King Georges Rd., Fords, 2 story, brick, steel utility and service bldg. $45,000.

N. J., Trenton—PLANT—American Steel & Wire Co., 80 Hamilton Ave., 2 story mfg. plant. $45,000.

R. I., Providence—MILL—Paragon Worsted Co., 39 Manton Ave., plans by N. Di Bennedetto, 28 Moorfield St., 2 story, brick textile mill. $40,000.

Tex., Amarillo—COMPRESSOR STATION—West Texas Gas Co., Lubbock, exten. compressor station. $40,000.

Tex., Canyon—COMPRESSING STATION—West Texas Gas Ca., Lubbock, exten. compressing station. $40,000.

B. C., Kamloops—COLD STORAGE PLANT—McGillivray & Co., Ltd., Kamloops, plans by Robt. Lyon, Penticton, 3 story, 60x146 ft. cold storage plant. $45,000.

B. C., Victoria—PLANT—Union Logging Co., Ltd., 106 Union Bldg., lumbering plant, saw mill, etc. $50,000.

N. B., Edmundston—GARAGE—Edmundston Motors, Ltd., Edmundston, plans by A. L. Perry, 1502 St. Catherine St. W., Montreal, Que., 80x150 ft., rein.-con., concrete block truck repair garage, Canada and Rice Sts. $100,000.

N. W. T., Yellowknife—DIAMOND DRILLING—Homer Yelowknife, Ltd., 330 Bay St., Toronto, Ont., diamond drilling adjacent West Bay fault. $53,000.

BIDS ASKED

Bids Asked July 10

Ont., Ottawa—PLANT—S. & C. S. Comber, archts., 1502 St. Catherine St. W., Montreal, Que., plant addn., for Morrison-Lamothe Bakery Ltd., 95 Echo Dr. $77,850. CD 5/10.

Ont., Toronto — WORK EQUIPMENT BLDG.—Canadian National Rys., H. A. Dixon, ch. engr. (Oper.), 360 McGill St., Montreal, Que., 1 story, 40x101 ft., concrete block, steel, work equipment bldg., concrete fdns., Danforth Yards. About $45,000.

Bids Asked

Que., Montreal—PLANT—Poirier, Bessette & Co. Ltd., 975 de Bullion St., printing plant. $40,000. H. Mercier, 3151 Maplewood Ave., Outremont, archt. CD 6/1—ENR 6/8.

CONTRACTS AWARDED

Ill., Dixon—POWER PLANT, etc.—Illinois Northern Utilities Co., Dixon, power plant addns., incl. new boiler house, boilers, etc., to Herlihy Mid-Continent Co., 140 S. Dearborn St., Chicago, Ill. Sargent & Lundy, 140 S. Dearborn St., Chicago, engrs.

Mo., St. Louis—SHOP BLDG.—Roelk Spring & Body Co., 322 South 15 St., Zone 3, 1 story, 50x73 ft., brick shop addn., concrete fdn., 433 Johnson St., to W. D. Quigley, 4523 Page Blvd., Zone 13. Est. $40,000. E. J. Gieseler, 4398 Gibson Ave., Zone 10, archt.

N. J., Hillside (br. Elizabeth)—WAREHOUSE—Miller Steel Co., 49 Empire St., Newark, 1 and 2 story, brick, steel warehouse, to D. O. Evans Co., 1445 N. Broad St. $42,000.

N. J., Newark—FACTORY BLDG.—Westinghouse Electric & Mfg. Co., Blvd. of Allies, Pittsburgh, Pa., modernization 4 story factory bldg., to Frank Briscoe, Inc., 287 S 19 St., $150,000. CD 4/3—ENR 4/6.

N. J., Plainfield—WAREHOUSE, etc.—Plainfield Lumber & Supply Co., 403 Berckman St., 2 story, 74x224 ft. cinder block warehouse and carpenter shop, to John Webster Co., 320 Amboy Ave., Metuchen. $40,500. CD 4/12—ENR 4/27.

Pa., Phila.—STORAGE—Barrett Co., 36 and Wharton Sts., brick storage bldg., to Lauter Constr. Co., Otis Bldg., $50,000. Awarded 6/26.

Pa., Ridgway—STORAGE—G. D. Williams, c/o A. Laugheimer, in charge of construction, Vulcan Soot Blower Co., Du Boise, miscellaneous structural changes to zero storage bldg. with rental lockers, separate contracts. $50,000.

Tex., Pt. Isabel—OIL PUMPING STATION, etc.—Pan American Pipe Line Co., M. Esperson Bldg., Houston, oil pump. station, brick, concrete several miles pipeline, etc., to J. W. France, 5211 Lawrence Lane, Corpus Christi. $68,600.

Tex., Velasco—STORAGE, etc.—Dow Chemical Co., Velasco, 1 story, 50x150 ft. and 70x145 ft. rein.-con. storage and sales bldgs., to R. P. Farnsworth & Co., Box 4186, Houston, $81,843. CD 6/13—ENR 6/15.

Wis., Manitowoc—PASSENGER DEPOT—Chicago & North Western Ry. Co., B. R. Kulp, ch. engr., 400 W. Madison St., Chicago, 6, Ill., 1 and 2 story, 22x198 ft., stucco on concrete block passenger depot, concrete fdn., to Hamann Const. Co., Manitowoc. CD 5/17—ENR 5/25.

B. C., Kelowna—COLD STORAGE PLANT—Cascade Co-operative Union, 190 Smith Ave., 4 story, 110x116 ft. cold storage plant, to J. W. Dairymple, P. O. Box 273, Penticton, upwards $65,000. Awarded 6/15. R. Lyon, Penticton, archt.

B. C., Kelowna—STORAGE PLANT— O. K. Packer Co-operative Union, Kelowna, 3 story, 65x150 ft. storage plant addn., to A. L. Patterson, Kelowna, about $50,000. Awarded 6/15. Robt. Lyon, Penticton, archt.

Ont., London—PLANT—Wonder Bakeries, Ltd., 2 Carlton Ave., altering plant, Carlton Ave., to John Hayman & Sons Co., Ltd., 432 Wellington St., $40,000.

UNCLASSIFIED

PROPOSED WORK

Illinois—TRANSMISSION LINE—Illinois Northern Utility, 421 West First St., Dixon, 33 mi. 33,000 volt electric transmission line from East Kewanee Substantion to Alpha, $55,000. L. G. Cannon, c/o owner, engr.

Indiana — FARM CONNECTIONS—Fulton Co., REMC, Rochester, farm connections, Fulton Co. $30,000.

Indiana—FARM CONNECTIONS—Wayne Co. REMC, Richmond, farm connections, Wayne Co. $25,000.

Iowa — FARM CONNECTIONS — Osceola Electric Co-Operative, Inc., Sibley, approx. 50 mi. farm connections, Osceola Co. $50,000. REA allot. Buell & Winter Eng. Co., 508 Insurance Exchange Bldg., Sioux City, engrs CD 4/6—ENR 4/13.

Kan., Edwards — PIPELINE — Kansas Power & Light Co., 808 Kansas Ave., Topeka, 7 mi. 8 in. pipeline. Over $75,000.

Kentucky—FARM CONNECTIONS—Fleming-Mason Rural Electric Coop. Corp., Flem-

UNCLASSIFIED (Proposed Work, Cont'd.) ingsburg, farm connections, Fleming Co. $50,000.

La., Eunice — SWIMMING POOL — St. Landry Parish School Bd., swimming pool. $25,000.

†La., Lake Charles—AIRBASE BLDGS.—U. S. Eng., 25 St. and Avenue F, Galveston, Tex., 1 emergency procedure bldg., and 3 flight clothing bldgs. Over $40,000.

Md., Baltimore—SWIMMING POOL—City, City Hall, bids soon swimming pool in Druid Hill Park, Madison Ave. entrance, $50,000. F. Thomas, 726 E. 33 St., archt.

†Md., Cumberland — AIRPORT GRADING, etc.—Dpt. P. Wks., City Hall, making revised plans, bids soon grading, drainage and paving at Wiley Ford airport. $150,000. CAA. CD 4/26—ENR 5/4.

★**†Md., Patuxent River (br. Wash. D. C.)**—NAVAL AIR STATION BLDG.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., rejected bids May 25, officers' recreation bldg., swimming pool, at Naval Air Station, NOY 8465. Will readvertise. (**Correction**—Status). CD 6/12—ENR 6/15, under CA.

†Mass., Lawrence—AIRPORT GRADING, etc.—Civil Aeronautics Admin., 385 Madison Ave., New York, 17, N. Y., making plans grading, paving at airport. CD 5/24—ENR 5/30.

Mass., Leominster — BATHHOUSE — City, F. L. Perry, chn. Bldg. Com., 36 Monument Sq., revising plans bathhouse, Whitney Park. Bids 6/5 rejected. CD 5/31.

Minnesota — FARM CONNECTIONS — Douglas Co. Cooperative Light & Power Assn., Alexandria, 320 farm connections and for acquisition, integration and rehabilitation 5.6 mi. existing line in rural electric distr. sys., Douglas Co. $150,000 REA allot.

Minnesota — RURAL ELECTRIFICATION SYSTEM — Minnesota Valley Cooperative Light & Power Assn., Montevideo, exten. electric service to farms in rural electrification distr. sys., Chippewa Co. $115,000 REA allot.

Minnesota—FARM CONNECTIONS—Wild Rice Electric Cooperative, Inc., Mahnomen, farm connections, Mahnomen Co. $150,000 REA. allot.

Mississippi — FARM CONNECTIONS — Southwest Mississippi Electric Power Assoc., Larman, farm connections, Copiah Co. $50,000.

Missouri—PIPELINE—Missouri Western Gas Co., Butler, 21 mi. 3½ and 4 in. pipeline between Harrisonville and Adrian. Over $40,000.

Montana and Wyoming—OIL PIPELINE, etc.—Oklahoma Pipe Line Co., National Bank of Tulsa Bldg., Tulsa, Okla., pipeline, pump. station and oil pipeline from Frannie, Wyo. pool to pump. station on Yale Oil pipeline, near Warren, Mont. $110,000.

N. J., Point Pleasant—PIER—H. M. Kristian, Point Pleasant Beach, timber pile bend pier, 12 ft. wide, exten. 32 ft. channelward, and two 47 ft. mooring piles, channelward of existing bulkhead at Point Pleasant Beach. $25,000.

†N. Y., Buffalo—AIRPORT FACILITIES—Civil Aeronautics Admin., 385 Madison Ave., New York, Zone 17, bids soon airport facilities, clearing, grading, drainage, 1,000 ft. runway exten. repaving portion taxiway and 3 new taxiways at municipal airport. $325,000.

North Carolina—TRANSMISSION LINE—Woodstock Electric Membership Corp., Belhaven, 33.5 mi. transmission line, Beaufort Co. $50,000.

†N. C., Charlotte—CEMETERY—U. S. Eng., 21 St. and Virginia Ave. N.W., Wash., 25, D. C., national cemetery.

†N. C., Raleigh—CEMETERY—U. S. Eng., 21st St. and Virginia Ave. N.W., Wash., 25, D. C., national cemetery.

Ohio—FARM CONNECTIONS — Washington Electric Cooperative, Inc., Marietta, farm connection, Washington Co. $60,000.

†O., Cleveland—FUEL STORAGE, etc.—National Advisory Com. Aeronautics, Cleveland Airport, installing fuel storage and distr. sys. for Engine Research Laboratory at Cleveland Airport. $210,000.

Oregon — TRANSMISSION LINE — West Oregon Electric Cooperative, Inc., Vernonia, 277 mi. transmission line, Columbia Co. $271,750.

Tex., Carthage—PIPELINE CARRIER—Continental Oil Co., Oil & Gas Bldg., Houston, laying 11 mi. crude oil pipeline carrier, $40,000.

†Tex., Dalhart—AIRPORT PAVING, etc.—U. S. Eng., 416 Wright Bldg., Tulsa, 2, Okla., reinforced paving and new taxiway at airport, Sol. 34-066-44-111. Over $40,000.

†Tex., El Paso—HANGAR—U. S. Eng., Albuquerque, N. M., 200x225 ft. hangar, wooden frame, steel or wooden trusses, all steel construction. Over $100,000.

Tex., Lampasas — AIRFIELD — Lampasas Co., Lampasas, voted $25,000 bonds, for land purchase for airfield, necessary imprvs.

Tex., Laredo — POORMAN RANGES — U. S. Eng., Fort Sam Houston, poorman ranges, incl. 103 firing positions, excav., 6 in. concrete slabs, bases for turrets, timber supports for sighting devices, control panels targets.

Tex., Marshall—STEEL FUEL TANKS—Arkansas Fuel Oil Co., Waskom, reconstructing steel fuel tanks. Over $40,000.

†Tex., Midland — AIRPORT RUNWAY — U. S. Eng., Fort Sam Houston, plans nearing completion East-West runway, Municipal Airport 2, Spec. 1145.

Tex., Nacogdoches—AIRPORT—Completing airport. $150,000.

Tex., Ozona—OIL PIPELINE—Tex-New Mexico Pipe Line Co., Ozona, 16 mi. 6 in. welded joint crude oil pipeline. Over $40,000.

Tex., Plainview—GAS LINE—West Texas Gas Co., Lubbock, 8 mi. 10¾ in. loop line. Over $40,000.

†Tex., San Antonio—AIRPORT BLDG.—City, G. Mauermann, mayor, 4 story, glass, concrete, steel municipal airport administration bldg. $425,000. CAA. A. B. & Rob. M. Ayres, Transit Tower Bldg., Phelps & DeWees & Simmons, Majestic Bldg., and M. Eichenroht and B. Cocke, Milam Bldg., archts. CD 6/27—ENR 6/29.

Wash., Seattle—OIL TANKS, etc.—Time Oil Co., 2737 Commodore Way, plans completed by Parker & Hill, engrs., Smith Tower, two 23,000 bbl. and two 15,000 bbl. steel oil tanks and concrete wall enclosing section of plant. Approx. $139,000.

†W. Va., Clarksburg—AIRPORT GRADING, etc.—Bd. Comrs. Harrison Co., Clarksburg, making plans grading, drainage, paving at airport. $140,000. CAA. CD 1/12—ENR 1/20.

Wisconsin—FARM CONNECTIONS—Grant Electric Co-Operative, Lancaster, farm connections, Grant Co., $50,000. REA allot.

B. C., Vancouver—RAMPS, etc.—Royal Vancouver Yacht Club, Inc., Vancouver, ramps, approaches, floats, etc., at river front. $25,000.

LOW BIDDERS

Bids Asked After July 1

★**†W. Va., Parkersburg**—AIRPORT IMPROVEMENTS—Clerk Wood Co., Court House, airport imprvs., incl. 2,300,000 cu. yd. clearing and grading, 34,500 ft. pipe, paving at airport, about 8 mi. from here. $1,600,000. CAA. Bids 3/21 rejected. CD 3/23—ENR 3/30, under LB.

Bids Asked July 10

N. Y., Idlewild—AIRPORT FILL—Dpt. Marine & Aviation, Pier A, foot of Battery Pl., North River, New York, Zone 4, placing hydraulic fill, etc., Contr. 5, Municipal Airport. Jay Downer, 30 Rockefeller Plaza, New York, Zone 20, engr. CD 6/23—ENR 6/29.

Bids Asked

†Mass., Westover Field (sta. Chicopee Falls)—TRAINING TANK— U. S. Eng., 31 St. James Ave., Boston, training tank, No. 19-023-44-Neg-232, U. S. Army Air Corp. $45,000.

†N. H., Portsmouth—GRADING, etc.—U. S. Eng., 31 St. James Ave., Boston, Mass. (selected list bidders), grading, loaming, etc., No. 19-023-44-Neg-233. $10,000.

LOW BIDDERS

†Del., New Castle—HANGAR, etc.—U. S. Eng., Penn Mutual Bldg., 6 and Walnut Sts., Phila., Pa., frame hangar, warehouse, etc., from Irwin & Leighton, 1505 Race St., Phila., Pa., **$243,300.** CD 6/29.

N. Y., Great Kills (Staten Island)—UNLOADING PLANT—Comr. Sanitation, 125 Worth St., New York, Zone 13, June 28, general contract, electric work and equip., water supply, plumbing and drainage, steam heating and power for unloading plant, from Lane Eng. Corp., 103 Park Ave., New York, Zone 17, **$94,309.** CD 1/26.

†N. Y., Mitchel Field (br. Hempstead)—HANGAR BLDG.—U. S. Eng., 120 Wall St., New York, Zone 5, June 27, altering hangar bldg., from Roberts-Nash Constr. Corp., 39-15 Main St., Flushing, **$70,640.** CD 5/22—ENR 5/25.

N. Y., New York—PIERS—Dpt. Marine & Aviation, Pier A, North River, Zone 4, June 28, repairs, renewals to piers, Contr. A, Pier 73, W. 33 St., North River, and Contr. D, Pier 31, Pike Slip, East River, from Woodcrest Constr. Co., 369 Lexington Ave., Zone 17, **$62,044** and **$25,363** respectively; Contr. B, Pier 20, Peck Slip, East River, and Contr. C, Pier 25, Oliver St., East River, from A. M. Hazell, 117 Liberty St., Zone 6, **$48,445.** CD 1/20—ENR 1/27.

†Ore., Astoria—AIR STATION BLDG.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., cold storage bldg. at Naval Station, Spec. 14018, NOY 9494, from L. Hoffman, Route 5, Box 1039, Portland, **$71,932.** CD 3/22.

CONTRACTS AWARDED

†Ariz., Tucson—PARKING APRON—U. S. Eng., 751 S. Figueroa St., Los Angeles 14, Calif., addnl. parking apron, Modification Center 2, Tucson—Spec. 631, P.D.O.C. Box 3977, Phoenix, **$225,939.** Awarded 6/24.

★**†Calif., Hamilton Field** — PARKING APRON, etc.—U. S. Eng., 74 New Montgomery St., San Francisco, new parking apron, Job 1555, to Fredrickson & Watson, 873 81 Ave., Oakland, **$999,033**; 3 hospital bldgs., addnl. utilities, Job 1555, to T. G. Meyer, 200 Quint St., San Francisco, **$84,732.**

†Calif., Oakland—ENGINEER YARD—U. S. Eng., 74 New Montgomery St., San Francisco, engineer yard at Oakland Army Base, Job 1590, to Whalin Bros., 2942 23 Ave., **$50,427.**

★**†Calif., Fairfield**—RUNWAYS—U. S. Eng., 1209 8 St., Sacramento, Zone 8, widening runways at Fairfield Suisun Air Base, Spec. 907, to J. A. Casson & N. M. Ball Sons, 22105 Meekland Ave., Hayward, **$1,192,963.** CD 6/19—ENR 6/22, under LB.

★**†Calif., Vernalis & Crows Landing**—AIR STATION BLDGS., etc.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., bldgs., services, paving Auxiliary Air Station, Spec. 14310, NOY 9832, to Johnson, Drake & Piper, 1736 Franklin St., Oakland, **$889,400.** CD 6/26, under LB.

★**†Conn., East Hartford**—AIRFIELD DEVELOPMENT—Pratt & Whitney Aircraft Div., United Aircraft Corp., 400 Main St., Rentschler Field development, incl. three 5,000 ft. runways, 150 ft. wide, 15 to 20 mi. sewer piping for drainage, electric light installation for test flying, tower 16 ft. diam., 54 ft. high, to E. B. McGurk, Inc., 355 Barbour St., Hartford. Est. **$500,000-$1,000,000.** Federally financed. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engrs.

Conn., East Hartford — BATHHOUSES, etc.—United Aircraft Club, Inc., 400 Main St., bathhouses, skating facilities, etc., Brewer St., to Pope & Tramonte, 109 Edwards St., Hartford, **$12,700.** Kane & Fairchild, 49 Pearl St., Hartford, archt. CD 5/29—ENR 6/8, under Commercial Bldgs.

†Del., Dover—APRON, etc.—U. S. Eng., 6 and Walnut Sts., Phila., Pa., to Ruppert Constr. Co., 1509 French St., Wilmington, apron and access roads **$174,457,** administration bldg., **$30,932,** operational and ranger bldg. **$126,410;** to Diletto Co., 6736 State Rd., Phila., Pa., water and sewerage sys., **$18,106;** all at airport. Grand total $349,905. CD 6/9.

★**†Ill., Quincy**—AIRPORT—Civil Aeronautics Admin., 608 S. Dearborn St., Chicago, airport, 3 runways, drainage, seeding, fencing, etc., to Cheney-Wright, Williamston, about **$1,000,000.** CD 4/4—ENR 4/6, under LB.

†Kan., Hutchinson — NAVIGATION TRAINER BLDGS.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 4 celestial navigation trainer bldgs., Naval Air Station, NOY 9932, to Dendlinger & Son Constr. Co., P. O. Box 2033, Wichita, **$77,650.**

†La., Kenner—FLIGHT HAZARD REMOVAL, etc.—U. S. Eng., 25 St. and Avenue F, Galveston, Tex., flight hazard removal, grounds leavelling, etc., to W. R. Aldrich Co., P. O. Box 272, Leesville, **$35,990.** Bids 6/22.

★**†Minn., Duluth**—AIRPORT—Civil Aeronautics Admin., Transportation Bldg., 608 S. Dearborn St., Chicago, Ill., enlarging airport, repair and surface runways, exten. 2 runways, taxiways, aprons, drainage, etc., to W. Pierson, Dearborn, Mich., **$780,169.** CD 4/4—ENR 4/6, under LB.

†N. M., Alamogordo — NAVIGATION TRAINER BLDG.—U. S. Eng., Commercial Bldg., Albuquerque, addnl. celestial navigation trainer bldg., Sol. No. 03-050-44-96, to A. J. Rife Constr. Co., 2808 Inwood Rd., Dallas, Tex., **$31,169.**

Okla., Barnsdall—PIPELINE—Great Lakes Pipe Line Co., Phil. Bldg., Tulsa, constructing, reconditioning 25 mi. refined oil pipeline, to A. C. Holder Constr. Co., Pawhuska, **$70,000.**

†Pa., Phila. — RELOCATING POWER LINE—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., relocating power line, Mustin Field, NAMC, NOY 10004, to Pennsylvania Railroad Co., Philadelphia Terminal Div., 30 St., **$29,739.**

†Tenn., Memphis — AIR FIELD BLDG., etc.—U. S. Eng., Grant St. west of Westwood St. Mobile, Ala., warehouse, unloading platform and ramps for existing warehouse, to Oman Constr. Co., Acklen Park, Nashville, & Foster & Creighton, American National Bank Bldg. Nashville, **$392,746.** CD 5/24—ENR 6/1.

†Tex., Laredo and San Antonio—GROUND WORK—U. S. Eng., Fort Sam Houston, ground work for providing facilities for parachute escape, to J. C. Worcester, 1434 W. Craig St., San Antonio, **$34,503.** Bids about 6/24.

†Tex., Tyler—FIRING RANGE—U. S. Eng., 231 W. Main St., Denison, firing range, to Reynolds & Sutton, Tyler, **$33,200.**